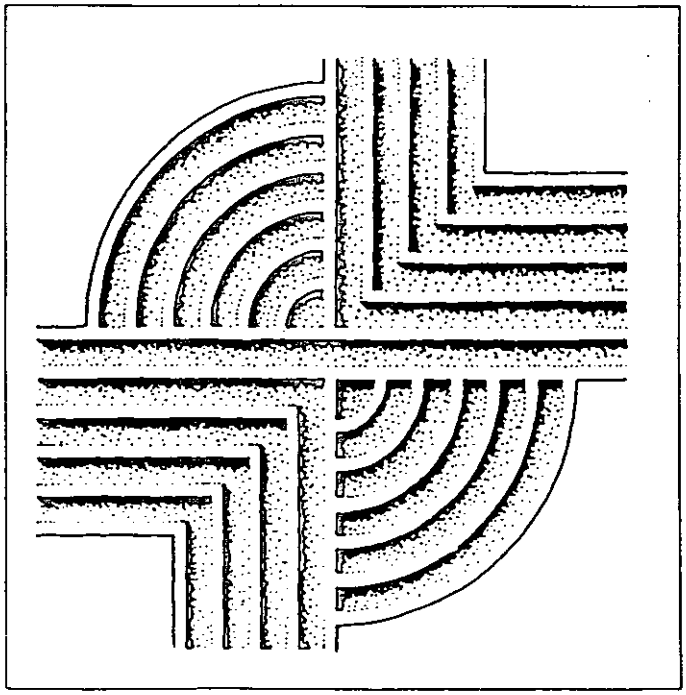
FORT BRAGG 5: AN ARCHAEOLOGICAL SURVEY OF THE 942.73 HA NORTHERN TRAINING AREA IV ON FORT BRAGG, HARNETT COUNTY, NORTH CAROLINA



CHICORA FOUNDATION RESEARCH SERIES 240

FORT BRAGG 5:
AN ARCHAEOLOGICAL SURVEY OF THE 942.73 HA NORTHERN TRAINING AREA IV ON FORT BRAGG, HARNETT COUNTY, NORTH CAROLINA

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Chicora Research Contribution 240

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ABSTRACT

This study represents and intensive archaeological survey of 942.63 ha under the oversight of Fort Bragg, North Carolina. This tract is located entirely in Harnett County, North Carolina.

This work is being done in order to comply with the National Historic Preservation Act (Public Law 89-665, as amended by Public Law 96-515), Guidelines for Federal Agency Responsibilities, under Section 110 of the National Historic Preservation Act, Army Regulation AR 420-40, and 36CFR800 (Protection of Historic and Cultural Properties). The project is administered for the United States Army by the National Park Service (NPS), Southeast Regional Office. The scope of work specified that the entire project area be surveyed as high probability using transects and shovel tests spaced at 30 m intervals.

The primary purpose of this investigation is to identify and assess the archaeological remains present at Fort Bragg for the National Register of Historic Places. There were also a number of secondary goals which included:

- an examination of changing prehistoric and historic land use;
- the effects of clear-cutting and long term exposure on archaeological sites;
- the effectiveness of 30 m interval transects at locating significant resources;
- changing lithic material preferences, and
- site function/duration based on artifact content.

These investigations incorporated a review of the site files at the North Carolina Office of State Archaeology. Although a number of surveys have been conducted in adjoining areas (Clement et al. 1997, Trinkley et al. 1996b, 1996c) only one site, 31HT123**, was previously recorded in the survey tract (Braley 1989).

A total of 35 sites and isolated occurrences were identified in the Northern Training Area IV survey tract. Of the 35 archaeological sites identified, only two (31HT690* and 31HT691**) are recommended potentially eligible for inclusion on the National Register of Historic Places.

Thirty of the 35 sites have prehistoric components and seven have historic components. Nineteen of the 35 sites exhibit only lithic debitage or other non-diagnostic materials. Early Archaic components are found on four sites, Middle Archaic remains are found on two sites, and Late Archaic components are present at two sites. Woodland materials, primarily pottery, are found at eight of the sites and these date from the Early through the Late Woodland Period. The historic sites reveal exclusively late nineteenth or early twentieth century.

Many of the sites identified in the survey tract evidence deflation, probably a result of the combined forces of agriculture, silvaculture, and, most recently, military operations. The two sites recommended potentially eligible for inclusion on the National Register reveal relatively large assemblages at sites where there is some potential for the recovery of in situ remains.

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Dr. David G. Anderson (National Park Service) administered the project for Fort Bragg. We appreciate his interest, encouragement, and confidence. Ms. Kimberly Washington (National Park Service) assisted us in navigating the paperwork for payment — a seemingly essential component of science.

We would also like to thank Ms. Dolores Hall and Dr. Billy Oliver of the North Carolina Office of the State Archaeology for providing direction for the background research, for clarifying curatorial issues, and for review comments.

This is a unique opportunity to explore the archaeology of a section of North Carolina which has received relatively little attention. The job, however, has been made much easier by the tremendous number of individuals who have gone before us and on whose work we have repeatedly relied. Some were instructors, some were colleagues, some were collectors, a few crossed these lines, and a very precious few were also friends.

The success of this project is largely due to the dedication and professionalism of the field crew which included Ms. Rachel Campo, Ms. Sabrina C. Buck, Mr. Jonathon Decker, Mr. Gregg Dickey, Ms. Amy Dodenhoff, Mr. Kevin Dougherty, Ms. Martha Foote, Mr. Ian Hamer, Mr. John D. Hamer, Mr. Todd Hejlik, Mr. Hollis Lawrence, and Mr. Bryan Young. The survey's were conducted from June 7, 1997, to July 16, 1997 and we appreciate their dedication and hard work. Thanks also to Ms. Rachel Campo who cataloged and processed the collections for curation.

INTRODUCTION

Survey Background

Investigation of the 942.63 ha Northern Training Area IV survey tract was conducted by Mr. William B. Barr of Chicora Foundation, Inc. for the National Park Service. Located in south central North Carolina, Fort Bragg encompasses portions of Cumberland, Harnett, Hoke, Moore, Richmond, and Scotland counties (Figure 1).

Although the post covers portions of six counties, the Northern Training Area IV survey tract is entirely located within Harnett County (Figure 2).

Only one major North Carolina highway, NC 24/87, which travels north-south, runs through Fort Bragg. Other roads within the post consist of a system of paved cantonment roads, perimeter and fire break roads, along with random two-rut vehicle tracks that allow access to different portions of the post.

The Northern Training Area IV survey tract is located in the south central portion of Harnett County and is bordered on the northeast by North Carolina highway NC 24/87. It is located in the northernmost section of Fort Bragg (Figure 3). The northern portion of the survey tract is bordered by Madison Briar Road. The northeast and eastern portions of the survey tract are bordered by the Fort Bragg military reservation boundary road. The southern boundary of the survey tract is bordered by Scotchman Road and the western portion is bordered by McRae Ride Road (Figure 3).

The survey tract is mostly wooded with only two areas being somewhat open. The drop zone east of McRae Ride Road and south of Fort Bragg Fire Break Road 2 contained sparse grass and scrub oak (Figure 4), whereas a borrow pit located in the northeast portion of the survey tract north of Madison Briar Road was totally void of any vegetation (Figure 5). The remainder of the survey tract was clear cut a number of years ago and has now been reforested by planted pine (Figures 6 and 7). The majority of the survey tract contains steeply sloping (exceeding 15%) topography (Figure 8) which typically ends at a drainage. Muddy Creek, which runs north to south, also bisects the survey tract.

All survey tracts within the Fort Bragg military reservation are designated as either high or low probability. The Northern Training Area IV survey tract is designated as a high probability area. This tract was examined using transects spaced at 30 m intervals. Shovel tests were placed at 30 m intervals along these transects. Once an archaeological site was identified, the area was shovel tested on a cardinal grid pattern at 10 m to 15 m intervals, with the interval of testing determined by site size. In addition, at least one 50 cm square test unit was excavated at each recorded site.

Measurements, in compliance with the National Park Service scope of work, were taken using metric units. In order to maintain consistency throughout this research, all measurements are provided using metric units and Table 1 provides conversions to English measures. The only exception is that of contours on site maps. These measurements, taken from United States Geological Survey maps, are in feet.

These investigations incorporated a review of the site files at the North Carolina Office of State Archaeology. This review consulted all known published reports and/or preservation plans which may exist regarding previous research at Fort Bragg. Although a number of previously recorded sites were identified by Dr. Thomas Loftfield (11979) as a part of a general reconnaissance survey of Fort Bragg, Camp Mackall, and Simmons Army Air Field, none of Loftfield's (1979) previously identified sites were

Figure 1. Location of the project area in Harnett County, North Carolina (USGS United States 1972 1:2,500,000).

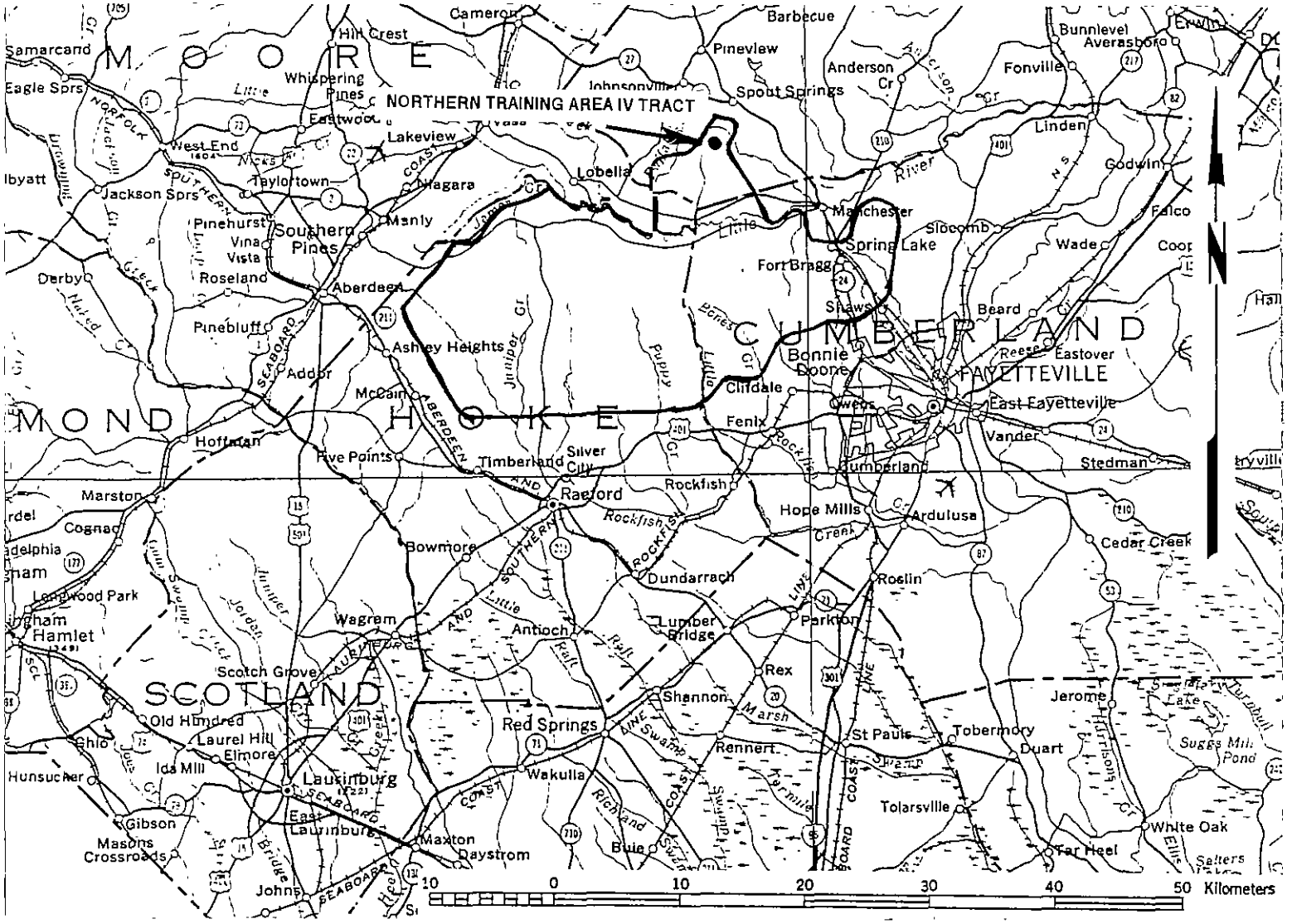

Figure 2. Location of the Northern Training Area IV survey tract in Harnett County, North Carolina (USGS North Carolina 1:500,000).

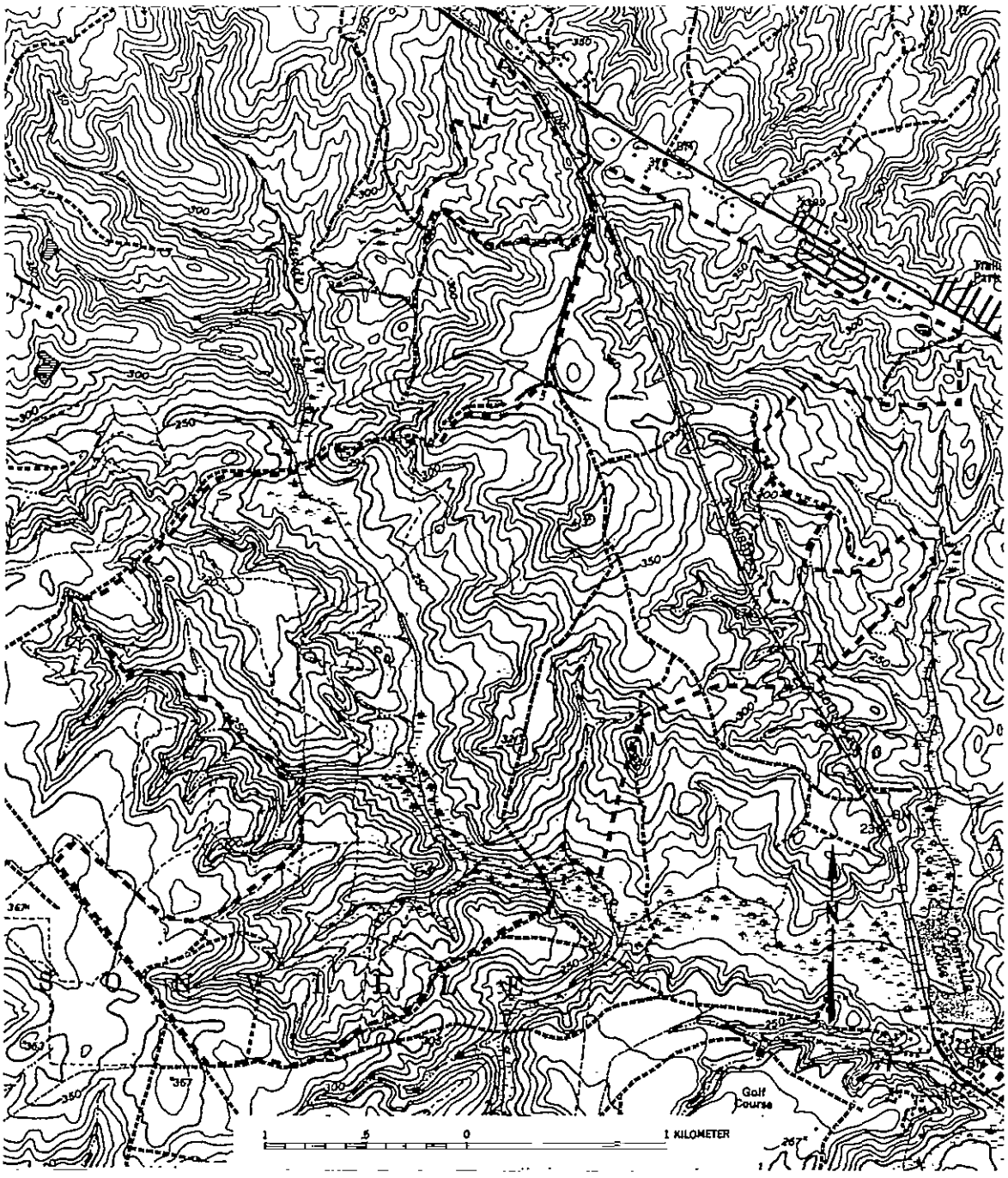

Figure 3. Northern Training Area IV survey tract (Olivia 1957PR81 and Overhills 1957PR71 USGS 7.5' topographic sheets).

Figure 4. General topography and vegetation of the Northern Training Area IV Drop Zone (view to the north).

Figure 5. Borrow pit north of Madison Briar Road (view to the north).

Figure 6. General topography and vegetation of Northern Training Area IV (view to the north of Fire Break Road 2).

Figure 7. General topography and vegetation of Northern Training Area IV (view north of Scotchman Road).

Figure 8. General topography in Northern Training Area IV (view south of Madison Briar Road).

found to exist within the confines of the present survey boundaries. In addition, the fort's Historic Preservation Plan (Braley 1990) and independent studies (Jameson 1986) were consulted regarding sites or structures on the National Register of Historic Places within the project area. Only one site in the survey area, a historic farmstead (31HT123**), was previously recorded by Braley (1990). Additional information concerning data recovery by Loftfield (1979) and Braley (1989, 1990), can be found in the **Research Strategy and Methods** section, as well as the **Conclusions**.

Both prehistoric and historic sites were located in the Northern Training Area IV survey tract. A total of 35 sites and isolated occurrences were identified during the survey. Of these, 21 contained enough cultural resources to be classified as a site, whereas 14 were determined to be isolated occurrences.

Of the archaeological sites identified, only two are recommended as potentially eligible for inclusion on the National Register of Historic Places. The remaining sites are recommended as not eligible for inclusion on the National Register and no further management activities are necessary. The Post Archaeologist, however, may wish to continue monitoring these sites. The

Table 1.
Metric Equivalents

LENGTH		
kilometer	km	0.62 miles
meter	m	39.37 inches or 3.28 feet
centimeter	cm	0.39 inches
millimeter	mm	0.04 inches
AREA		
hectare	ha	2.47 acres
square km	km^2	0.3861 square miles
WEIGHT		
metric ton	t	1.1 English tons

TEMPERATURE
C to F = (°C x 1.8) + 32 = °F

additional data may prove useful to our understanding of settlement, in particular, spatial patterning and density, as well as the process of destruction through artificial means.

The largest temporal category from the survey of the North Training Area IV is non-diagnostic prehistoric sites which contained only flakes (n=19). Early Archaic (Hardaway, Big Sandy, and Kirk) components were found at four sites (31HT685*, 31HT690*, 31HT696*), and 31HT708), Middle Archaic (Morrow Mountain and Guilford)components were found at two sites (31HT690* and 31HT710*), Late Archaic (Small Savannah River Stemmed and Gypsy Stemmed) components were found at two sites (31HT690* and 31HT710*) and Woodland (Badkin, Yadkin, Hanover, Caraway, and Clarksville) components were found at eight sites (31HT686*, 31HT690*, 31HT692*, 31HT707*, 31HT708*, 31HT709*, 31HT714*, and 31HT715*). Historic components, exclusively dating from the late nineteenth through early twentieth centuries, were found at seven sites (31HT123**,31HT687**,31HT691**,31HT697**, 31HT698**, 31HT710**, and 31HT717**).

Surveys were conducted from June 7, 1997 to July 16, 1997. The principal investigator was Dr. Michael Trinkley. The Field Director for the project was Mr. William B. Barr. Field crew Ms. Rachel Campo, Ms. Sabrina C. Buck, Mr. Jonathon Decker, Mr. Gregg Dickey, Ms. Amy Dodenhoff, Mr. Kevin Dougherty, Ms. Martha Foote, Mr. Ian Hamer, Mr. John D. Hamer, Mr. Todd Hejlik, Mr. Hollis Lawrence, and Mr. Bryan Young.

Curation

Archaeological site forms have been filed with the North Carolina Office of State Archaeology. The field notes, photographic materials, artifact catalogs, and artifacts resulting from these investigations have been curated at Fort Bragg using the North Carolina Office of State Archaeology accessioning and cataloging system. All records and duplicate copies have been provided to Fort Bragg and will be maintained by that institution in perpetuity.

NATURAL SETTING

Physiography and Drainage

Fort Bragg, which encompasses about 60,000 ha, forms a roughly rectangular shape measuring approximately 19 km north-south by 44 km east-west. The fort's most distinctive feature is perhaps its diversity of relief. Elevations range from about 63 meters in the west to about 155 meters in the northeast along Gibson Creek. Scattered across the post are several "hills" about 30 meters higher than the surrounding topography. Loftfield observes that the extremes in topography "have been exaggerated by an erosive process on the sandy soils along the numerous streams" (Loftfield 1979:3).

The drainage pattern of the Fort Bragg area (well illustrated by Loftfield 1979:Figure 1), consists of a number of relatively small streams and creeks flowing either north or south from an east-west ridge that runs through the center of the Fort Bragg reservation. Those to the south flow into the Cape Fear River, while those to the north flow into the Lower Little River (which empties into the Cape Fear). Rockfish Creek, the headwaters of which originate on Fort Bragg, serves as the major drainage for the creeks in the western portion of the post.

Fort Bragg is situated entirely within the Sandhills physiographic province — a narrow band of ancient marine sediments sandwiched between the Coastal Plain, about 18 km to the southeast, and the Piedmont, about 50 km to the northwest (Figure 9). Almost every previous study on the post mentions that the Sandhills seem to be a favorite location for military installations (such as Fort Jackson, South Carolina and Fort Gordon, Georgia) — the land being cheap, and the climate and topography offering the potential for year-round use.

The 942.63 ha Northern Training Area IV survey tract is located in southeastern Harnett County. The survey area, like the remainder of the post, is situated in the Sandhills region of the Upper Coastal Plain physiographic region and are located in the south central portion of North Carolina. Harnett County is bounded to the northeast by Wake County, to the east by Johnston County, to the southeast by Sampson County, to the south by Cumberland County, to the southwest by Moore County, to the west by Lee County, and to the northwest by Chatham County.

The topography of Harnett County consists of gently undulating hills with elevations ranging from about 15 m to 149 m AMSL. The Sandhills are characterized by broad, sandy ridges and long, less sandy side slopes (Hudson 1984:2). Elevations within the Northern Training Area IV range from a low of 76 m AMSL in the west to a high of 126 m AMSL in the east.

The northern and eastern portions of Harnett County are drained by the Black and Cape Fear rivers, which flow through the northeastern portion of the county northwest to southeast. The southeast and eastern portions of the county drain into Mingo Swamp. Numerous smaller creeks, such as Avents Creek, Hector Creek, Neills Creek, West Buies Creek, Thortons Creek, and Juniper Creek drain into the Cape Fear River in the northern portion of the county. The central and western portion of the county is drained by McLean Creek, Duncan Creek, Jones Creek, Barbeque Creek, and Big Branch Creek which flow into the Upper Little River which, in turn, flows east and drains into the Cape Fear River. The southern portion of the county is drained by Cypress Creek, Buffalo Creek, Hector Creek, and Jumping Run Creek which flow into the Lower Little River in Cumberland County. According to the State Board of Agriculture:

> [t]hrough the pine lands run numerous bold, strong and swiftly flowing streams, never diminished

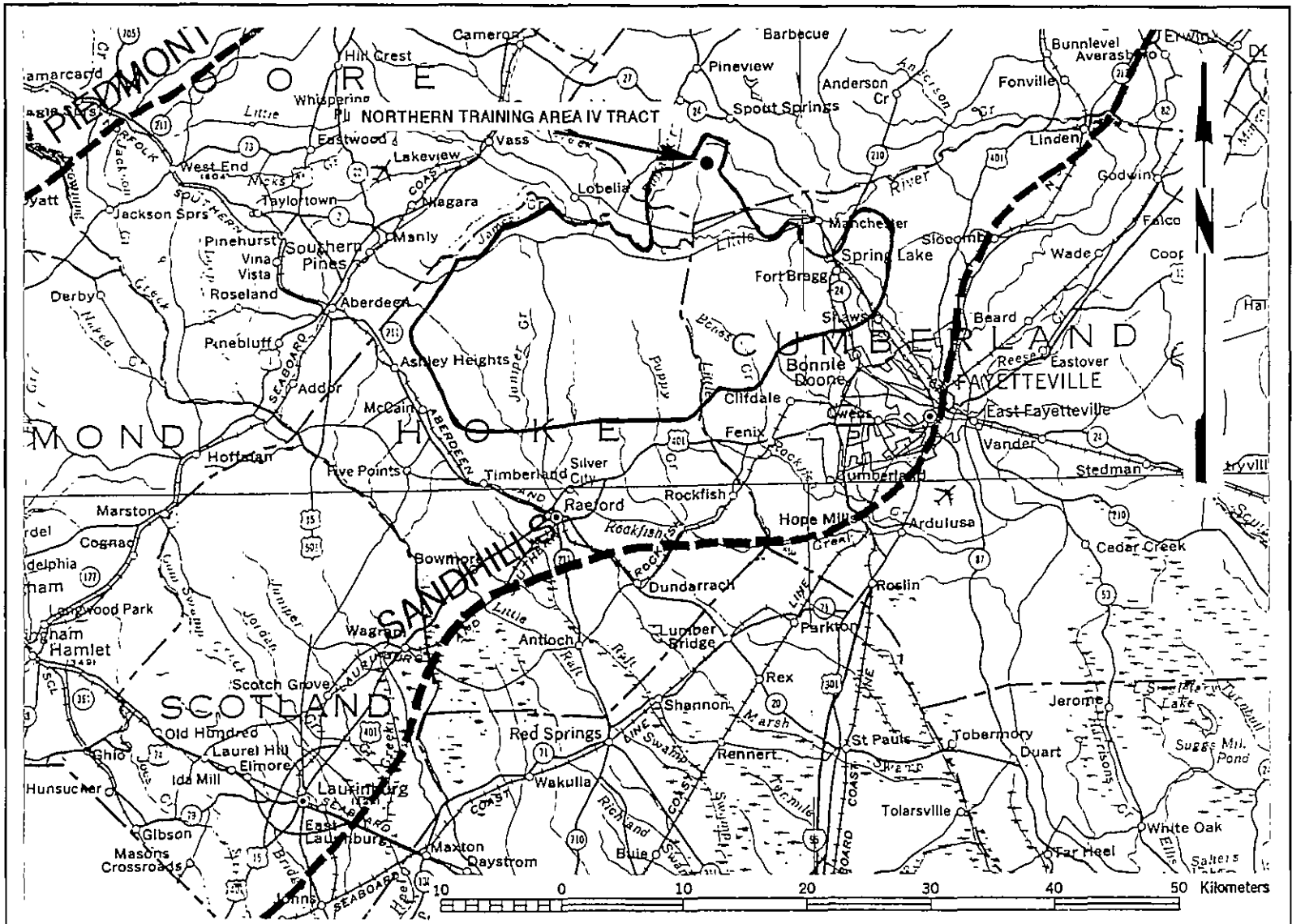

Figure 9. Physiographic setting of Fort Bragg in the Sandhills and the location of the Northern Training Area IV survey tract.

by drought and rarely excited by freshet. These, from the earliest settlement, furnished convenient mill-sites, and originated that active lumber industry so stimulating to the prosperity of the county and that the towns on the Cape Fear river; and, up to the successful introduction of cotton manufacture into the State, their power was speedily applied to the use of cotton-mills, which were built in the town of Fayetteville, on Cross and Blount's creek, on Buckhead, Beaver Dam and Rockfish (two of these) creeks, and on Lower Little River; and on all of these there are now large and flourishing cotton factories (State Board of Agriculture 1896:327).

Figure 10. Slope to drainage at 31HT690*, view to the north.

As evidenced by the current vegetation throughout this survey, large areas of Fort Bragg have been clear cut for fields and/or timber harvesting at one time. As a result, there have been some changes in the original physiography and drainage of the area. Over time, the topography of hills and drainages in these survey tracts have become less sharp and more gentle. It is possible that some sites, which today are found far from flowing water, earlier had creeks or springs which flowed much closer to them. A good example is 31HT690*. Although the site is located on a broad ridge adjacent to a number of seasonal drainages, the primary drainage for the Northern Training Area IV survey tract, Muddy Creek, is located about 1.75 km west of the site (Figure 10).

Geology and Soils

Spangler (1994:2) describes the geology of the area simply as several layers of unconsolidated sediment (primarily of the Tuscaloosa Formation, deposited in the Upper Cretaceous period) underlain by bedrock which is composed of volcanic slate. This bedrock is generally 62 to 125 m below surface; however, near the town of McCain (just west of Fort Bragg), bedrock is found at about 34 m below surface. No bedrock is known to be exposed anywhere in the area.

Immediately available lithic resources consist of river pebbles that are of a relatively high quality quartz and found in gravel bars of the Lower Little River and the larger tributaries. Metavolcanic rock does not outcrop on Fort Bragg. However, there is a source located a relatively short distance away, about 16 km, on the Hoke-Moore county line (North Carolina Department of Conservation and Development 1958). Even greater numbers of resources are available in the Slate Belt, just within the Piedmont. Igneous rocks within the Slate Belt include rhyolite, andesite, and intrusive quartz veins.

Traditionally the soils of Harnett County have been identified as Norfolk-Ruston and Norfolk Sands (U.S. Department of Agriculture 1939:1069-1072). The Norfolk-Ruston soils were associated with the Coastal Plain, while the Norfolk Sands were associated with the Sand Hills. In neither area has the climate favored the

development of organic matter, so the soils are light-colored, predominantly sandy in the surface horizon, and range from coarse sands to fine sandy loams. Almost all are medium to strongly acid in reaction. The occurrence of these soils in the survey tract is discussed below.

Today, modern soil science identifies seven primary soil associations in Harnett County. Only two, the Gilead-Blaney-Candor and the Bibb-Wedhadkee associations, are associated with Fort Bragg. The former is characterized by moderately well drained to somewhat excessively drained soils on long slopes and broad sandy ridges while the latter is characterized by poorly drained soils found on narrow floodplains (Spangler 1994).

The soils in the Northern Training Area IV survey tract includes the Bibb, Blaney, Candor, Gilead, Lakeland, Roanoke, Vaucluse, and Wakulla series. The most prominent soils type is moderately well drained Gilead sand which is found on about 34% of the project area. Blaney sands are well drained and found on about 23% of the project area. The other minority types, in order of prominence, are excessively drained Candor sand, poorly drained Bibb loam, excessively well drained Lakeland sand, well drained Vaucluse loamy sand, poorly drained Roanoke loam, and excessively well drained Wakulla sand. Although this study produced a very small sample, most of the sites in the project area occur on Blaney and Lakeland soils. This suggests, with no great surprise, that Native Americans preferred to occupy the well drained sandy soils.

Since the effects of erosion and soil deposition characteristics are important in determining site probability, typical soil profiles, as described by Spangler (1994), are briefly the survey tracts are also shown in Figures 11.

The **Bibb Series**, consists of poorly drained, moderately permeable soils with slopes that range from 0 to 2%. The upper 25 cm consists of a dark grayish brown (10YR 4/2) loam. This is followed by a Cg1 horizon, 60 cm in depth, of dark gray (10YR 4/1) sandy loam.

The **Blaney Series**, characterized by Blaney loamy sand with a 2 to 8% slope, exhibits an Ap (or often A) horizon about 22 cm in depth consisting of grayish brown (10YR 5/2) loamy sand. From 22 cm to a depth of 55 cm is an E horizon of light yellowish brown (10YR 6/4) loamy sand. The underlying Bt1 horizon, to a depth of 70 cm, is a very pale brown (10YR 7/4) sandy clay loam. Below this, to 82 cm, is the Bt2 horizon of light yellowish brown (10YR 6/4) sandy clay loam. Below this, to a depth of 1.15 m, lies the BC horizon which contains a brownish yellow (10YR 6/6) sandy clay loam with reddish yellow (10YR 6/6) and light gray (10YR 7/2) mottles. The final horizon, a C horizon of reddish yellow (10YR 7/1) and very pale brown (10YR 7/4) mottles. The Blaney soils have some of the higher soil erodibility factors present (ranging from .15 to .28).[1]

The **Candor Series** are characterized by somewhat excessively drained soils with a slope of 0 to 15%. The A horizon is typically a dark grayish brown (10YR 4/2) sand which runs to 8 cm in depth. This is followed by an E horizon, to 62 cm, of a yellowish brown (10YR 5/4) sand. The Bt horizon extends to 87 cm and is a yellowish brown (10YR 6/6) loamy sand.

The **Gilead Series**, are moderately well drained soils with slopes that range from 8 to 15%. The upper 12 cm consists of an Ap horizon that is pale brown (10YR 6/3) loamy sand. Below, to a depth of 20 cm, is a Bt1 horizon consisting of brownish yellow (10YR 6/6) sandy clay loam. The Bt2 horizon extends to 55 cm and is a reddish

[1] The soil erodibility factor (expressed as K) used in the universal soil loss equation is a measure of the susceptibility of soil particles to detachment and transport by rainfall and runoff. It basically indicates the susceptibility of a soil to water-induced erosion. The soil loss tolerance factor (T), sometimes called the permissible soil loss, is more often used to help quantify wind-induced erosion. This factor is expressed as the maximum rate of soil erosion that will still permit a high level of crop productivity. It is therefore somewhat less useful in these discussions. Regardless, all of the discussed soils in the Camp Mackall project area have the maximum T rating of 5, or 5 tons of soil per acre per year.

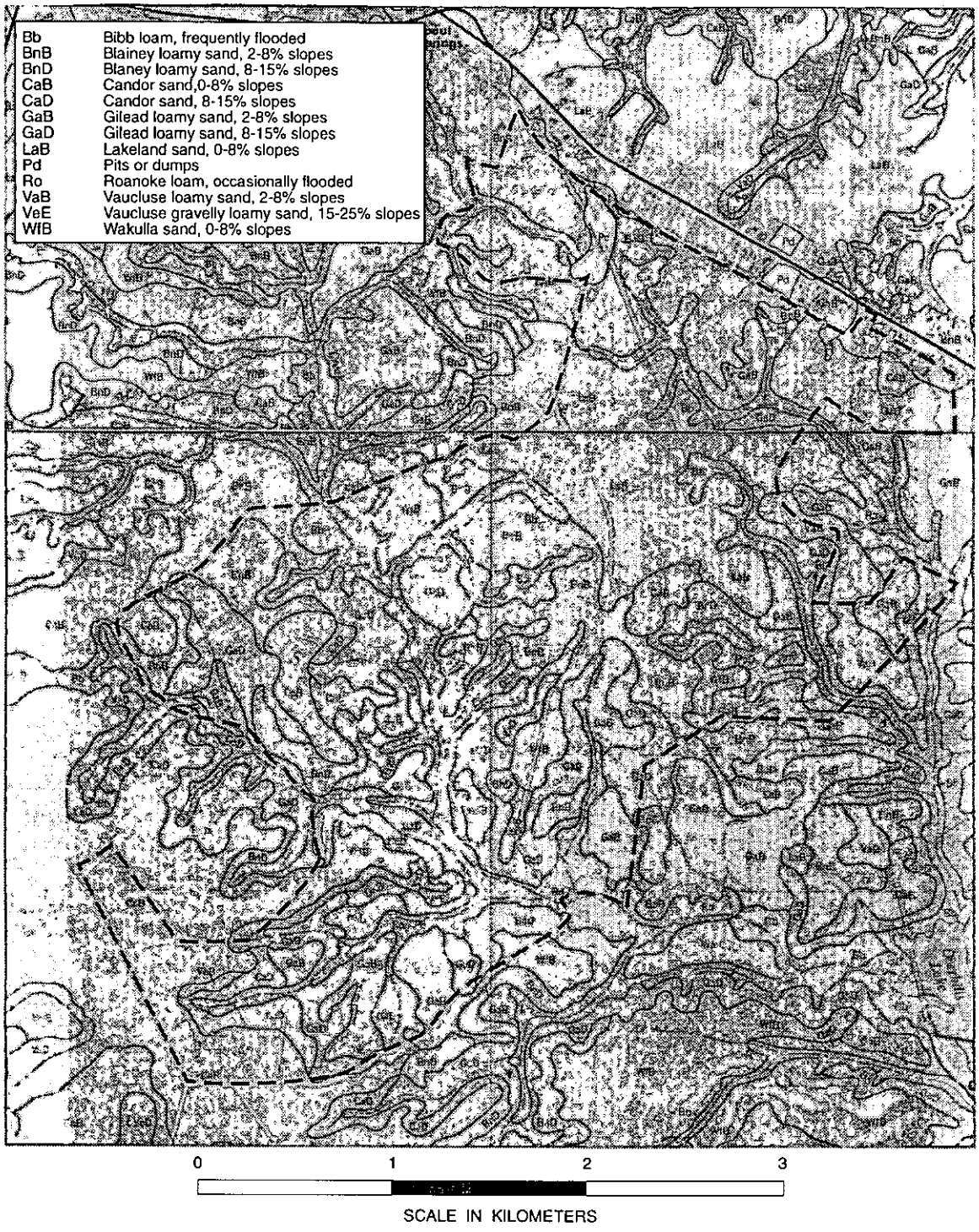

Figure 11. Soils of the Northern Training Area IV survey tract.

yellow (7.5YR 6/6) sandy clay with common fine distinct yellowish red (5YR 5/6) and white (5YR 8/1) mottles. The Bt3 horizon runs to 1.0 m in depth and consists of brownish yellow (10YR 6/8) sandy clay.

The **Lakeland Series**, formed in the uplands and consisting of excessively drained soils, will typically have a profile with A soils, usually dark grayish brown (10YR 4/2) sand, to 15 cm. Below the A soils, to a depth of 1.5 m, is the C1 horizon characterized by yellowish brown (10YR 5/6) sand.

The **Roanoke Series** consists of poorly drained soils that range in slope from 0 to 2%. The Ap horizon extends to 17 cm in depth and contains a grayish brown (10YR 5/2) loam. This is followed by 30 cm of a BA horizon which contains a grayish brown (10YR 5/2) loam. The Btg horizon exhibits a grayish brown (10YR 5/2) clay loam to a depth of 1.0 m in depth. This is followed to a depth of 1.5 m by a BCg horizon of light gray (10YR 6/1) clay loam with common fine prominent strong brown (7.5YR 5/8) mottles. The final horizon, a Cg horizon, extends to 1.5 m in depth and contains a light gray (10YR 7/1) loamy sand.

The **Vaucluse Series** consists of well drained soils that formed in loamy Coastal Plain sediments with slopes ranging from 2 to 25%. The A horizon, dark brown (10YR 4/3) loamy sand, occurs to 7.5 cm below the surface. This is followed by the BA horizon of strong brown (7.5YR 5/6) sandy loam that extends to 15 cm. From 15 cm down to 40 cm is the Btx1 horizon, which consists of yellowish red (5YR 5/8) sandy loam. This is followed by the Btx2 horizon, a yellowish red (5YR 5/8) sandy loam with a depth of 75 cm. The Btx3 horizon occurs at a depth of 75 to 110 cm and is a strong brown (7.5YR 5/8) sandy loam with yellow (10YR 7/6) mottles. The Cx horizon extends to 1.5 m in depth and contains a brownish yellow (10YR 6/6) stratified and loamy sand with common coarse distinct strong brown (7.5YR 5/8) mottles.

The **Wakulla Series** consists of somewhat excessively drained, rapidly permeable soils with slopes that range from 0 to 8%. The A horizon, a brown and dark brown (10YR 4/3) sand, occurs from 0 to 10 cm in depth. The E horizon contains a brownish yellow (10YR 6/6) sand and extends to 27.5 cm in depth. This is followed by a Bt horizon of yellowish brown (10YR 5/8) loamy sand which extends to 90 cm below surface. The C1 horizon extends to 1.35 m in depth and contains a brownish yellow (10YR 6/8) sand.

Typically, the Sand Hills region experiences relatively little erosion. In undisturbed areas 0.012 t of soil loss per ha per year has occurred. Logged areas experience about 0.319 t of soil loss per ha per year. The most destructive erosional situation described by the United States Department of Agriculture (1980:25) are logging roads where erosion consists of 22.46 t of soil loss per ha per year. From logging and logging roads this amounts to approximately 22.779 t of soil loss per ha per year.

Wayne Trimble (1974) studied the effects of man-induced erosion in the southern Piedmont, the Carolina Sand Hills, the southern Coastal Plain, and the Atlantic Coast Flatwoods. His studies concentrated on areas throughout central North Carolina, South Carolina, and Georgia. He determined that in undisturbed areas of the Sand Hills approximately 0.002 t of soil loss per ha per year has occurred (Trimble 1974:25). Logged areas in the Carolina Sandhills experience .053 t of soil loss per ha per year (Trimble 1974:25). Logging roads experience 3.67 t of soil loss per ha per year and that associated skid trails suffered 2.203 t of soil loss per ha per year. According to Trimble (1974:25) total erosion from logging operations and associated skid trails and logging roads contributes to a total of 5.93 t of soil loss per ha per year within the Carolina Sandhills.

Although heavy erosion has been observed in pervious studies conducted at the Sicily Drop Zone (Trinkley et al. 1996a), and the Camp Mackall Drop Zone (Trinkley et al. 1996b), where clear cutting has occurred, this same type of erosional process has been observed in areas adjacent to the current study (Trinkley et al. 1996c). Site monitoring may, over time, determine the short term affect of clear cutting on soil

erosion, as well as the extent of damages to archaeological resources.

Climate

North Carolina is part of the warm temperate zone, characterized by what might be called a placid climate, with local variations due partially to the tremendous range in elevation from the mountains to the coast. Centrally located, Harnett County is generally hot and humid in the summer because of the moist, maritime air. The winters are moderately cold but short since the mountains to the west protect the area from many cold waves. The average winter temperature in nearby Fayetteville is 6°C. In the summer the average daily temperature is 26°C. In general, spring comes earlier to the Sand Hills than to the adjacent Piedmont since the loose, well-drained soils can warm more rapidly. This benefit, however, is coupled with the general dryness of the soils. The total annual precipitation is 1.20 m. Of this, 55% usually falls in April through September, which includes the growing season for most crops (Spangler 1994:2; see also Reed 1936).

During the late Pleistocene and early Holocene periods temperatures were considerably cooler than they are today. Temperatures began to moderate and approach modern temperatures around 7,000 B.P. along the Southeast Atlantic Slope (Wright 1976:594). A more thorough discussion is provided below relating vegetational change to these climatic ranges.

Floristics and Paleoenvironment

The Sandhill Province is dominated by longleaf pine and various xeric oaks such as post oak, Margaret's oak, bluejack oak, and turkey oak. In addition, much of the overstory vegetation includes sweetgum, beech, southern red oak, mockernut hickory, and southern sugar maple (Barry 1980:139-140; Gade and Stillwell 1986). This, in general, adequately characterizes the vegetation of Camp Mackall and Fort Bragg. Loftfield observed that the vast majority of the post consisted of "droughty sandy upland habitat longleaf pine (*Pinus palustris*), turkey oak (*Quercus laevis*), with a ground cover of wire grass (*Gaylussacia dumosa*)" which was being kept in balance by periodic controlled burns (Loftfield 1979:9).

In the 1860s only about 10% of what would later become Hoke County was improved for cultivation (Hilliard 1984:Map 44), while by the 1940s about 25% of the county was cropped with around 70% being forested (Cruikshank 1944:11-12). Only about 7% of Fort Bragg, however, was being cultivated prior to its purchase by the military in the second decade of the twentieth century. Cotton and corn were historically produced on the bottomlands, while the rolling sandy uplands were dominated by smaller farms producing grains and fruits. The area, before the Civil War, was the site of experiments in the production of tea (State Board of Agriculture 1896:327).

Pollen cores obtained from the Southeastern Coastal Plain indicate a sequence of successional forest types from the Full Glacial through the Post Glacial periods (Watts 1971; Whitehead 1965). Prior to strong evidence of human population (pre-15,000 B.P.), cold-adapted vegetation, predominately spruce and jack pine, was found in the Piedmont and Coastal Plain area. Other less common species included oak and ironwood. All of these species suggest a much colder and drier environment than found today (Watts 1980:326). Some have suggested that this climate was much like today's eastern Canadian boreal forests, dominated by pine and spruce distributed in a mosaic pattern of stands within sedge-dominated prairies. There is evidence for parabolic dune formations during the Full Glacial period as derived from sediments from the Pee Dee River. These dune fields are also present north of the Cape Fear. This arid phase is also evidenced in the pollen record of Singletary Lake where there is an increase in the sand fraction during this period (Whitehead 1973; Claggett and Cable 1982).

The somewhat warmer and moister environment evidenced in the Late Glacial (15,000 to 10,000 B.P.) is associated with an increase in deciduous species. Northern hardwoods, such as oak, hickory, beech, birch, and elm began replacing

the spruce and jack pine populations. This change corresponds with warmer summer temperatures and colder winter temperatures, as well as an increase in precipitation. It is during this period that the first moderately well documented evidence for human occupation occurs (Watts 1980; Sassaman et al. 1990:21). This period was also a transitional period between the glacial Late Pleistocene and the essentially modern climatic conditions of the Holocene. The resulting mesic forest, with its relatively high percentages of beech and hickory, has no modern analog and was the result of the cool, moist conditions which characterized this transition.

During the Post Glacial (10,000 B.P. to present) oak and hickory dominated the region. Other species such as walnut, hemlock, and hazelnut disappeared from the pollen record. By 9,500 B.P. hickory and ironwood species declined and were replaced by sweetgum and blackgum. These changes prior to 7,000 B.P. suggest periods of rapid warming and increased moisture (Watts 1980; Watts and Stuiver 1980). It has been observed that these very rapid environmental changes would have created a dynamic ecosystem requiring constant adaptive adjustments on the part of early groups (Cable and Mueller 1980:7).

In the Sandhills region southern pine communities displaced the oak-dominated forests between 8,000 and 6,000 B.P. which led to a decrease in nut mast production (Sassaman et al. 1990:22). This vegetational change probably had an effect on prehistoric land use during certain times of the year, since nut masts were probably more isolated and concentrated rather than widespread. Coupled with these vegetational changes was a cooler, moister climate (Watts 1971 and 1980).

Brooks et al. (1986) suggest that not only latitude, but also elevation affected when vegetational changes occurred. As a result, broad environmental changes probably occurred first in the Coastal Plain.

From about 5,000 B.P. and continuing to the present, Whitehead (1973) found pine increasing slightly, although oak appeared to remain dominant in natural forest stands. The precontact environment of the Piedmont Southeastern United States was termed "temperate deciduous forest" by Shelford (1974:56-88) with oak and hickory interspersed with pine, maple, ash, and other deciduous species (for a graphic representation see Shantz and Zon 1936). Küchler (1964) identifies the "potential natural vegetation" of the Fort Bragg area as that of the Southern Mixed Forest, surrounded by the more common Oak-Hickory-Pine Forest. Küchler's forests represent what would "exist today if man were removed from the scene and if the resulting plant succession were telescoped into a single moment" (Küchler 1964:2). The result for the project area would be tall forests of broadleaf deciduous and evergreen and needleleaf evergreen trees. The dominants would include beech, sweet gum, southern magnolia, slash pine, loblolly pine, white oak, and laurel oak. Hickories would occur as minor components, along with dogwood and hollies.

By the historic period the Sand Hills were dominated by loblolly pine. Although the name means, literally, "mud puddle," and was likely applied since the tree grew on wet soils, the loblolly is also known as the "bull pine" because of its prodigious size and remarkable ability to invade dry, flat terrain and even the hilly uplands. The pines formed vast, open forests interrupted only by the occasional inland swamp and its accompanying hardwoods.

The Sand Hills, their soil, and their vegetation frequently attracted the attention of observant commentators. One, Edmund Ruffin, remarked in 1843 that:

> the land hereabouts is barren, or but triflingly productive. The middle grounds between the rivers are the highest, and consequently the most barren . . . Their soil is of so sterile a nature that in many places it produces no grass to cover it; and the tracks of any animal passing over it, are discernable, as if they had been upon snow. The low grounds among these hills are either

> extensive swamps and bays, or narrow valleys, into which, the mould from the adjacent high lands have been deposited by the rains which run down their sides. Hence they become suitable for agriculture and pasturage, and are principally those places, near which settlements are effected (Mathew 1992:4).

On another occasion Ruffin commented:

> the soil is of deep sand & very poor. The growth pine intermixed with small scrub & other oaks. . . the country seems as desolate as possible. Not a creature was seen, nor any mark of man's neighborhood, save the deep sandy track in which I was riding (Mathew 1992:262).

European occupation of the countryside, including occupation of the Sand Hills, gradually changed its appearance. The pines which dominated the topography, for example, began to give way to scrubby hardwoods by the early 1800s (Silver 1990:187). It is almost certain that the process was largely completed by the time that Ruffin traveled across the region in the mid-1800s. Yet there were other, equally momentous changes. Turkeys and other wild fowl were less common, the flocks of Carolina parakeets and passenger pigeons were on the verge of extinction. Buffaloes were already gone from the neighboring Piedmont. In the lowland swamps the beavers, otters, and minks were close to gone, as were other occasional visitors such as bears, wolves, panthers, and bobcats.

The countryside was becoming increasingly dominated by small farms. The new ecology, created by clearing and farming grains, encouraged flocks of quail. While the minks and otters gave way to hunting pressures, they were quickly replaced by the opossum. But into the nineteenth century the most common animals were the cattle, hogs, and sheep brought by the Sand Hill settlers. Silver notes that, "fewer canebrakes and overgrazed mixed hardwood forests attest to the forage habits of these Old World Beasts" (Silver 1990:187-188). The changes were dramatic, gradually giving rise to the Sand Hills we know today.

PREHISTORIC AND HISTORIC OVERVIEW

Previous Research

Some of the earliest archaeology within south central North Carolina includes the 1860 excavations by Hamilton MacMillan of a mound southwest of Fayetteville, near Rockfish Creek (Holmes 1916). The mound, about 0.4 m high and 6 m in diameter, contained a large number of skeletons, reputed to have represented as many as 50 individuals. Although Holmes offered no temporal estimate for this and similar mounds in the vicinity, he did note that, "they are quite different from those mounds of Caswell and other counties of the western section of the state, and of much less interest so far as contents are concerned" (Holmes 1916:19). This was one of the earliest accounts of the differences between the "treasures" found in Mississippian temple mounds and the dearth of remains which characterized Middle Woodland burial mounds.

Nearly 30 years later, Charles Peabody visited Cumberland County on vacation with his daughter. During this respite he excavated four mounds near Hope Mills (Peabody 1910:429; Coe 1983:165). His findings paralleled the earlier studies of Holmes. Found were human bones, smoking pipes, a celt, a shell gorget, and similar Middle Woodland artifacts. Peabody's work also revealed the relatively strong local interest in the past. Peabody's contact, Dr. J.W. McNeil, was a participant on another archaeological excursion which "explored" a mound south of Little Rockfish Creek about 24 km southwest of Fayetteville (Oates 1972:328-329).

The next archaeological activity in the Fayetteville area was probably the work of Howard MacCord, who war stationed at Fort Bragg in the early 1960s. Intrigued by the mounds in the area he excavated one of them, the McLean Mound on the east side of the Cape Fear River (MacCord 1966). The mound, which was apparently as high as 1.8 m in the 1920s had eroded down to just over a half meter by the time of the study. Perhaps MacCord's most significant contribution was keeping alive the interest in burial mound studies (see Coe et al. 1982; Phelps 1983; Wetmore 1978; Wilson 1982).

Previous archaeological work at Fort Bragg includes Loftfield (1979), McCullough (1985), Jameson (1986a, 1986b), Braley (1988, 1990), Braley and Schuldenrein (1993), King et al. (1992), Abbott (1994, 1995), Trinkley et al. (1996a, 1996b, 1996c, 1997), and Clement et al. (1997).

Loftfield's (1979) study consisted of a reconnaissance level survey of about 6,690 ha which consisted of a 15% sample of the entire Fort Bragg property. He recorded 490 archaeological sites of which none occurred within the boundaries of the Northern Training Area IV survey tract. Loftfield found that prehistoric sites were most often located on hilltops, toe slopes, upland flats, and saddles. Usually they occurred in association with rank 1 streams or springs and were found on sandy soils. Typically the sites were located on a northern, northeastern, or eastern slope face. He predicted that at Fort Bragg the average site density would be 10 sites per km^2.

During Braley's (1988) work at the Northern Training Area, he tested Loftfield's model for site location and found it to be useful (see also Braley 1990:22). However, Braley (1988) recorded many more sites (15.8 sites per km^2) than predicted by Loftfield's model. Of course, Loftfield's predictions were based on a reconnaissance level study where primarily fire break roads and drop zones were surveyed, whereas Braley's (1988) work consisted of an intensive survey of a 15% random sample. He found that site density was slightly higher in lowland settings (1990:23). Both Loftfield's and Braley's models focussed on prehistoric resources, Although a number of Braley's (1989) sites were found south and west of the current project area,

one site (31HT123*) was recorded in the current project area (Figure 12).

An intensive study was performed by Trinkley et al. (1996c) on 776.55 ha located in the Northern Training Area. In the survey tracts south and west of the Northern Training Area IV survey tract (see survey tracts "H" and "I", Trinkley et al., 1996c:84-85) a total of 17 sites were recorded on 433.73 ha. This suggests an average site density of 3.9 sites per km². Although this figure is somewhat lower than Braley's (1989, 1990), it does support the notion that environmental differences found in the survey tracts may play an important part in determining the site density, and that this site density will vary at Fort Bragg, depending on these environmental conditions.

In an intensive survey of 1,618.80 ha conducted by Clement et al. (1997) north and south of the Lower Little River an overall site density of 10.3 sites per km² was found. Although this compares favorably with Braley's (1989, 1990) earlier work, it was found that this density dropped to 6.5 sites per km² for those tracts located south of the Lower Little River. They suggest that this variation is "the result of differing geomorphology between the two areas as is indicated by the topography (Clements et al. 1997:184).

A notable early attempt to establish prehistoric settlement patterns was undertaken in 1980 using National Park Service Survey and Planning grant funds to explore Sampson County, situated east of and adjacent to Cumberland (Hackbarth and Fournier-Hackbarth 1981). This study identified 196 sites, and environmental and locational attributes for a random sample were examined in the hope of establishing predictive models. The results, however, were rather mixed. Most sites were found (not unexpectedly) near water sources. There was also a correlation between some loamy sands and sands and sites in general (Hackbarth and Fournier-Hackbarth 1981:78), although there seemed to be no preference by temporal period. Attempts to determine preferences for different lithic materials by time period were also largely unsuccessful (Hackbarth and Fournier-Hackbarth 1981:78).

In 1986 Kenneth Robinson conducted a series of reconnaissance level studies for the Cumberland County Commissioners and Administrators as part of a NPS Survey and Planning Grant. His findings document the exceptional diversity of prehistoric and historic resources in Cumberland County, although given the nature of the study no clear statements could be made concerning either site densities or predictive models (Robinson 1986:44).

In neighboring Moore County, King et al. (1992) also found that there was a preference for lowland settings. However, the sites in the uplands were larger, a departure from Braley's (1990) expectations that larger sites would be found in the lowlands. King et al. (1992:125) concluded that upland sites were occupied for longer periods of time and perhaps by more people at any given time. Site density here was similar to that found by Braley (1990) (15.2 site per km²).

Although there has been a great deal of survey information gathered from the Sandhills region, there have been few excavations. Some limited excavations were conducted at a prehistoric site identified during the survey of the Rockfish Creek Wastewater Sewage Treatment Facility in southern Cumberland County. McLean and Sellon (1979) note that the site was a "mixture of Woodland and Archaic artifacts" overlying a "sparsely occupied zone of Archaic lithic material with no diagnostic artifacts" about 40 cm below the surface (McLean and Sellon 1979:65). The modest assemblage included Archaic projectile points and several hundred sherds. As Robinson (1986:42) points out, "there is still a need for re-evaluation and synthesis of the material" and little more can be said about this study.

Sassaman et al. (1990) have excavated a number of sites at the Department of Energy's Savannah River Site in the Sandhills of South Carolina. Sassaman et al. (1990) excavated several Woodland Period sites which are interpreted to have functioned as residential bases. These sites are characterized by rock clusters (which are assumed to be hearths or food preparation areas), discrete clusters of lithic debitage, and household areas which contain few artifacts.

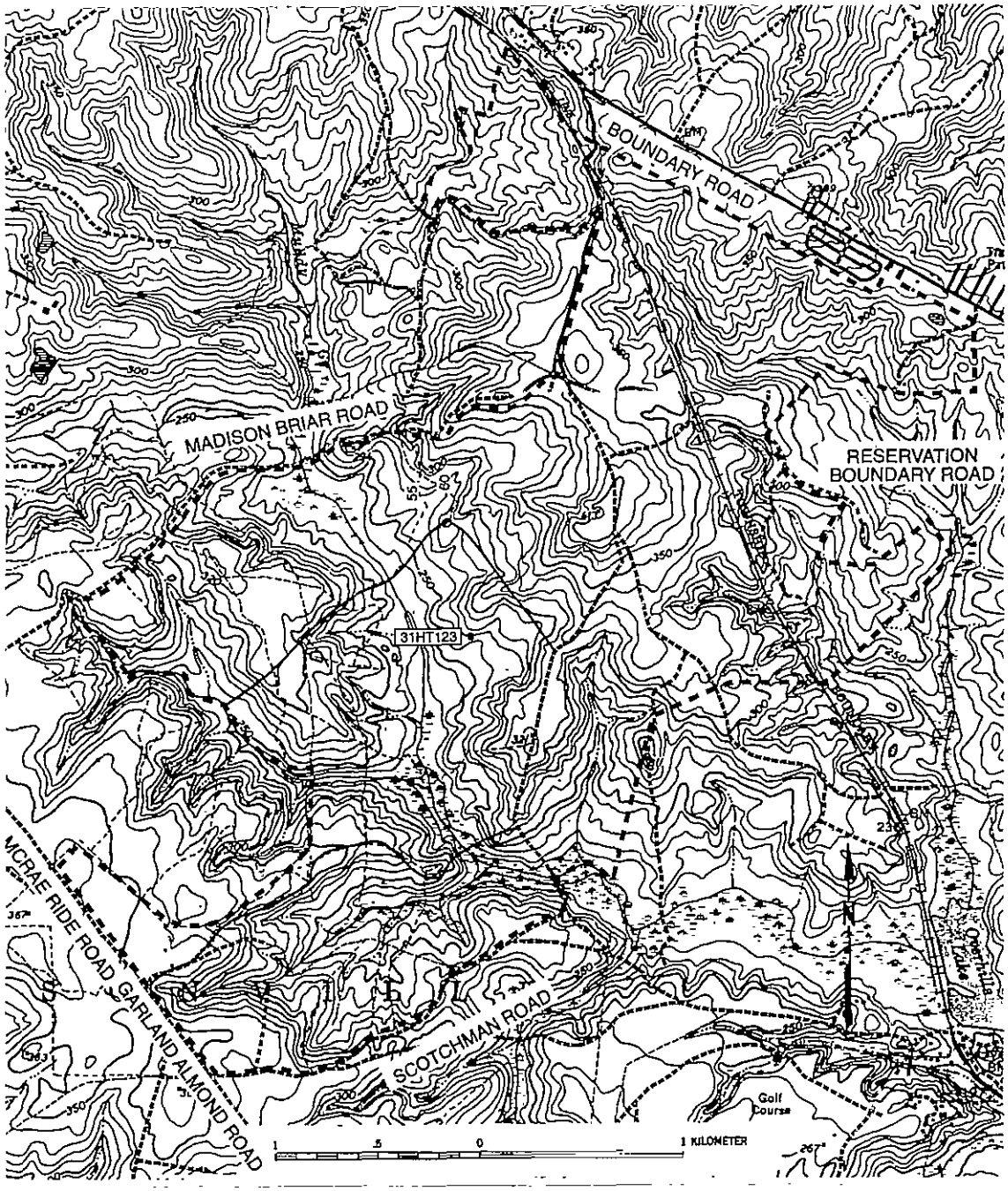

Figure 12. Site 31HT123** identified by Braley (1990) in association with the North Training Area IV survey tract.

While further removed, it seems almost inconceivable not to mention at least a few sites on which much of North Carolina's prehistoric chronology is based. About 65 km from Fort Bragg to the northwest is the Town Creek mound and village site. Described by Loftfield (1979:12) as the "great center of Pee Dee culture," it might better be viewed, at least culturally, as a small mound in a big pond. Regardless, work there has defined the Pee Dee culture, ceramics, and people (Coe 1983, 1995; Ferguson 1971; Reid 1967). About 80 km to the northwest are the equally important sites of Hardaway and Doerschuk (along with the less well reported sites at Morrow Mountain and Lowders Ferry) (Coe 1949, 1964).

Historic resources have tended to take a "back-seat" to prehistoric sites in the research conducted in the general vicinity of Fort Bragg. During surveys for the Rockfish Creek Wastewater Sewage Treatment Facility, Robinson mentions that the location of "Folly Fort," a Confederate Civil War fortification built to defend the Cape Fear River, was identified (Robinson 1986:52). Otherwise, historical archaeology has tended to focus on urban research in Fayetteville (for a synopsis see Robinson 1986:46-48).

Turning to South Carolina, Brooks and Crass (1991) have published a predictive model for historic resources on the Savannah River Site based on survey and archival data. While early pioneers settled on the Savannah River, by the late eighteenth century, settlements had progressed up the larger drainages. A similar situation appears to have occurred in the Cape Fear River Valley (see Meyer 1961: Maps V-VIII; Loftfield 1979).[1] As better road systems developed in the nineteenth century, settlement became more road oriented (Brooks and Crass 1991:78-79). However, Abbott et al. (1995:23) point out that because the Sandhills soils were poor for growing crops, particularly in the uplands settlers were deterred from living in this area. It is likely that only lands bounded by creeks or rivers were found to be suitable for agriculture. A similar observation was made for neighboring South Carolina by Edmund Ruffin in the late antebellum (Mathew 1992). This suggests that historic settlement patterning may have changed very little through the county's history.

[1] In Cumberland County there is good evidence that occupation spread up creeks, especially Rockfish Creek, with numerous small villages established on the banks of Cross Creek and even further upstream along the Cape Fear. One historic village which documents this settlement pattern is Cross Creek. Situated 1.6 km west of the Cape Fear River, on the banks of Cross Creek, the village was the terminus for river traffic and the point of origin for roads being built into the interior. By 1770 it contained about a hundred structures, including grist mills, a tannery, a brewery, and a sawmill.

Prehistoric Overview

Overviews for North Carolina's prehistory, while of differing lengths and complexity, are available in virtually every compliance report prepared. There are, in addition, some "classic" sources well worth attention, such as Joffre Coe's *Formative Cultures* (Coe 1964), as well as some new general overviews (such as Phelps 1983 and Ward 1983). These can be supplemented with a broad range of theses and dissertations produced by students of North Carolina's colleges and universities. Also extremely helpful, perhaps even essential, are a handful of recent local synthetic statements, such as that offered by Sassaman and Anderson (1994; see also the recently revised version in Anderson and Sassaman 1996) for the Middle and Late Archaic. Only a few of the many sources are included in this study, but they should be adequate to give the reader a "feel" for the area and help establish a context for the various sites identified in the study areas. For those desiring a more general synthesis, perhaps the most readable and well balanced is that offered by Judith Bense (1994), *Archaeology of the Southeastern United States: Paleoindian to World War I.* Figure 13 offers a generalized view of North Carolina's cultural periods.

Paleoindian Period

The Paleoindian Period, most commonly dated from about 12,000 to 10,000 B.P., is evidenced by basally thinned, side-notched projectile points; fluted, lanceolate projectile points, side scrapers, end scrapers; and drills (Coe

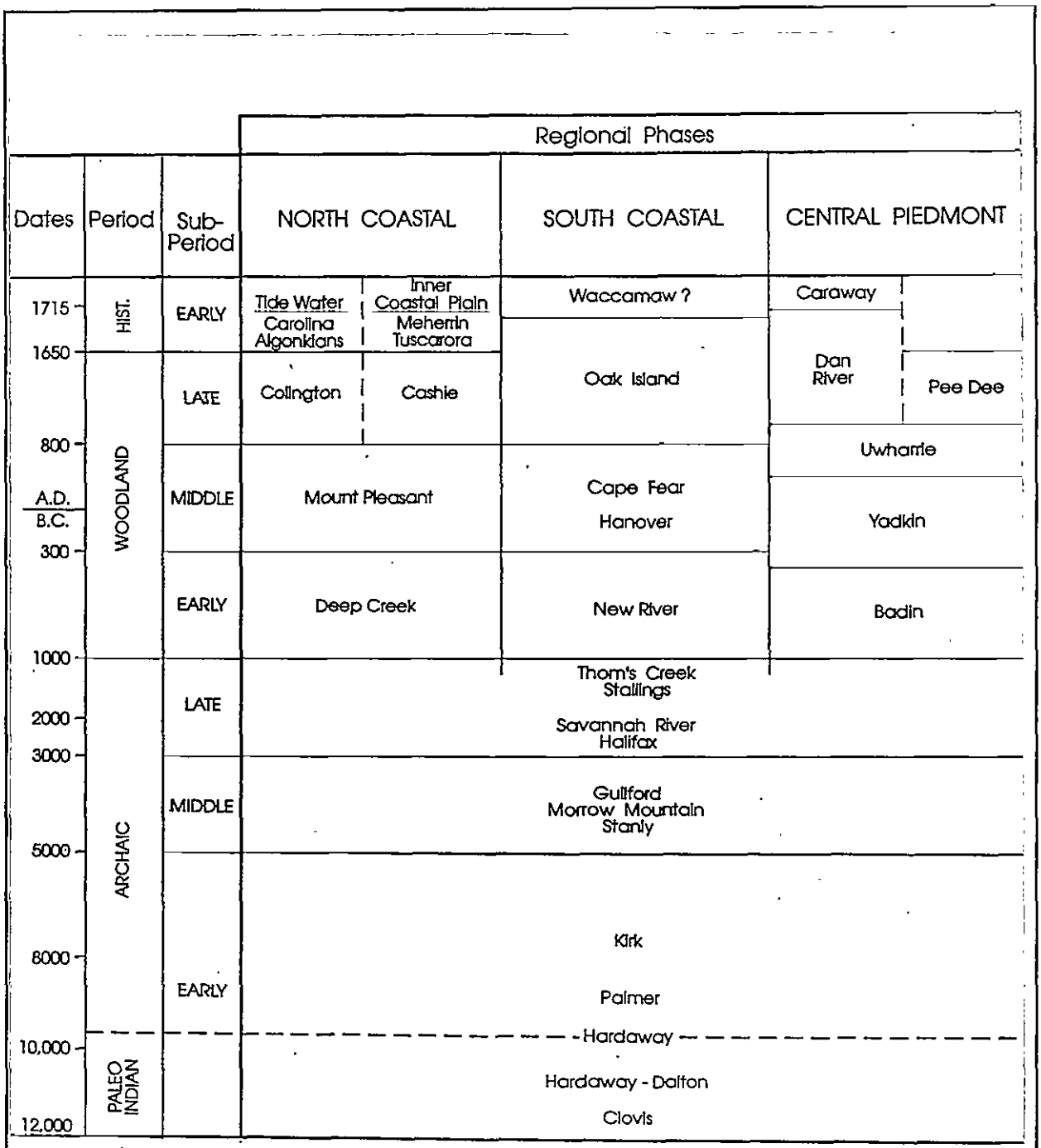

Figure 13. A generalized cultural sequence for eastern North Carolina (partially adapted from Coe 1964:Figure 116 and Phelps 1983:Figue 1.2).

1964; Michie 1977; Williams 1968). Oliver (1981, 1985) has proposed to extend the Paleoindian dating in the North Carolina Piedmont to perhaps as early as 14,000 B.P., incorporating the Hardaway Side-Notched and Palmer Corner-Notched types, usually accepted as Early Archaic, as representatives of the terminal phase. This view, verbally suggested by Coe for a number of years, has considerable technological appeal.[2] Oliver suggests a continuity from the Hardaway Blade through the Hardaway-Dalton to the Hardaway Side-Notched, eventually to the Palmer Side-Notched (Oliver 1985:199-200). While convincingly argued, this approach is not universally accepted.

The Paleoindian occupation, while widespread, does not appear to have been intensive. Artifacts are most frequently found along major river drainages, which Michie interprets to support the concept of an economy "oriented toward the exploitation of now extinct mega-fauna" (Michie 1977:124). Survey data for Paleoindian tools, most notably fluted points, is rather dated for North Carolina (Brennan 1982; Peck 1988; Perkinson 1971, 1973; cf. Anderson 1990b). In spite of this, the distribution offered by Anderson (1992:Figure 5.1) reveals a rather general, and widespread, occurrence throughout the region. Phelps (1983:21) states that settlement patterning in the North Carolina Coastal Plain is impossible to meaningfully discuss since there have been so few recorded sites, but speculates on the presence of base camps along major streams, with special activity sites in the uplands. An alternative is the model tracking the replacement of a high technology forager (or HTF) adaptation by a "progressively more generalized band/microband foraging adaption" accompanied by increasingly distinct regional traditions (perhaps reflecting movement either along or perhaps even between river drainages) (Anderson 1992b:46).

Distinctive projectile points include lanceolates such as Clovis, Dalton, perhaps the Hardaway (Coe 1964; Phelps 1983; Oliver 1985) (Figure 14). A temporal sequence of Paleoindian projectile points was proposed by Williams (1965:24-51), but according to Phelps (1983:18) there is little stratigraphic or chronometric evidence for it. While this is certainly true, a number of authors, such as Anderson (1992a) and Oliver (1985) have assembled impressive data sets. We are inclined to believe that while often not conclusively proven by stratigraphic excavations (and such proof may be an unreasonable expectation), there is a large body of circumstantial evidence. The weight of this evidence tends to provide considerable support.

Unfortunately, relatively little is known about Paleoindian subsistence strategies, settlement systems, or social organization (see, however, Anderson 1992b for an excellent overview and synthesis of what is known). Generally, archaeologists agree that the Paleoindian groups were at a band level of society (see Service 1966), were nomadic, and were both hunters and foragers. While population density, based on isolated finds, is thought to have been low, Walthall suggests that toward the end of the period, "there was an increase in population density and in territoriality and that a number of new resource areas were beginning to be exploited" (Walthall 1980:30).

According to Braley (1990:5) there are a modest number of late Paleoindian sites on Fort Bragg. Of the 196 sites that Loftfield (1979) found which produced diagnostic points, only 26 contained Hardaway, Palmer, or Big Sandy artifacts. Abbott et al. (1995:8) also identified several Paleoindian points from contexts in the near vicinity of Fort Bragg.

Archaic Period

The Archaic Period, which dates from

[2] While never discussed by Coe at length, he did observe that many of the Hardaway points, especially from the lowest contexts, had facial fluting or thinning which, "in cases where the side-notches or basal portions were missing, . . . could be mistaken for fluted points of the Paleo-Indian period" (Coe 1964:64). While not an especially strong statement, it does reveal the formation of the concept. Further insight is offered by Ward's (1983:63) all too brief comments on the more recent investigations at the Hardaway site (see also Daniel 1992).

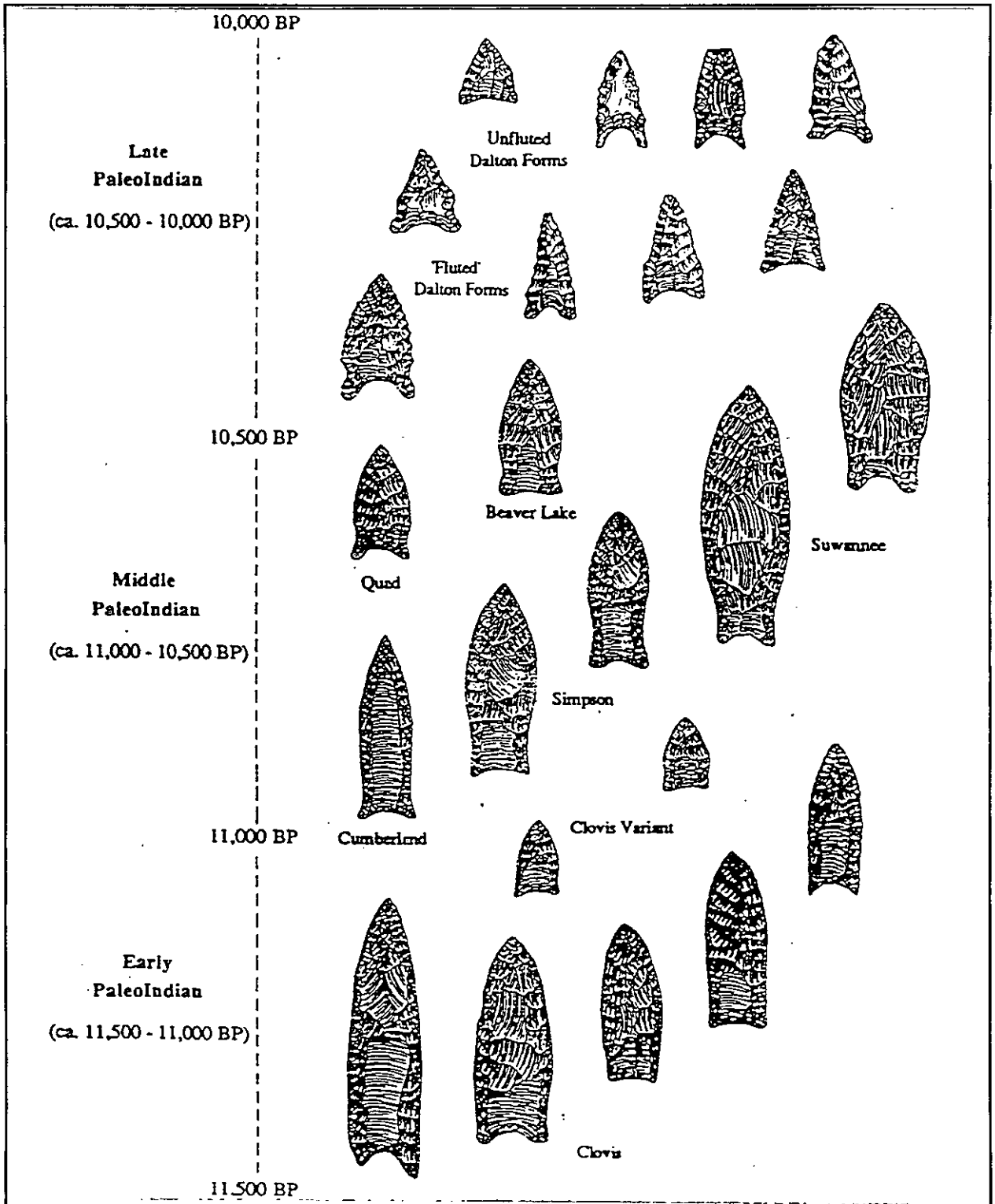

Figure 14. Diagnostic Paleoindian projectile points and suggested chronology for Georgia and the Carolinas (adapted from Anderson 1992a:Figure 3.1).

10,000 to 3,000 B.P.[3], does not form a sharp break with the Paleoindian Period, but is a slow transition characterized by a modern climate and an increase in the diversity of material culture. Associated with this is a reliance on a broad spectrum of small mammals, although the white tailed deer was likely the most commonly exploited animal. Archaic period assemblages, exemplified by corner-notched and broad-stemmed projectile points (Figure 15), are fairly common, perhaps because the swamps and drainages offered especially attractive ecotones.

Loftfield's (1979:54) data suggests that there was a noticeable population increase from the Paleoindian (with five identified components in his study) into the Early Archaic (where at least 42 components were isolated). This corresponds with findings by other researchers (see, for example, Ward 1983:65). This has tentatively been associated with a greater emphasis on foraging. Diagnostic Early Archaic artifacts include the Kirk Corner Notched point. As previously discussed, Palmer points may be included with either the Paleoindian or Archaic period, depending on theoretical

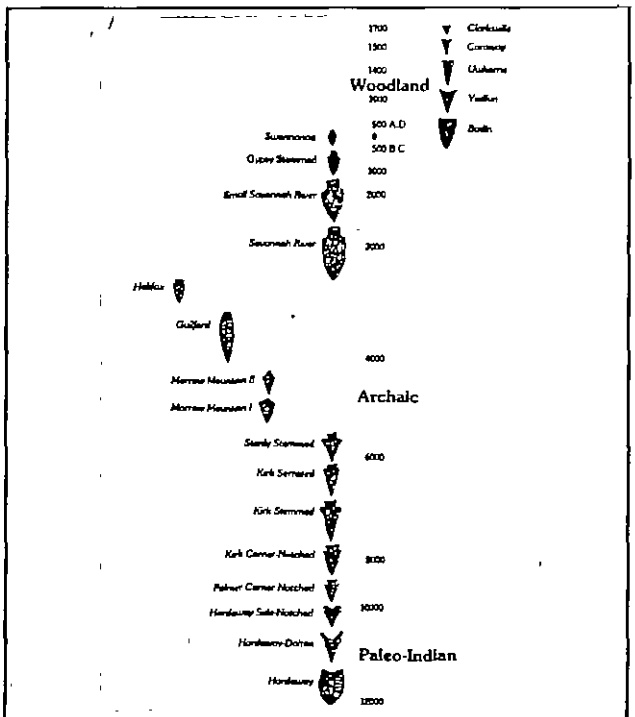

Figure 15. Projectile point traditions of North Carolina (adapted from Oliver 1985:Figure 10-8)

perspective. As the climate became hotter and drier than the previous Paleoindian period, resulting in vegetational changes, it also affected settlement patterning as evidenced by a long-term Kirk phase midden deposit at the Hardaway site (Coe 1964:60). This is believed to have been the result of a change in subsistence strategies.

Settlements during the Early Archaic suggest the presence of a few very large, and apparently intensively occupied, sites which can best be considered base camps. Hardaway might be one such site. In addition, there were numerous small sites which produce only a few artifacts — these are the "network of tracks" mentioned by Ward (1983:65). The base camps produce a wide range of artifact types and raw materials which has suggested to many researchers long-term, perhaps seasonal or multi-seasonal, occupation. In contrast, the smaller sites are thought of as special purpose or foraging sites (see Ward 1983:67).

Middle Archaic (8,000 to 6,000 B.P.)

[3] The terminal point for the Archaic is no clearer than that for the Paleoindian and many researchers suggest a terminal date of 4,000 B.P. rather than 3,000 B.P. There is also the question of whether ceramics, such as the fiber-tempered Stallings ware, will be included as Archaic, or will be included with the Woodland. Oliver, for example, argues that the inclusion of ceramics with Late Archaic attributes "complicates and confuses classification and interpretation needlessly" (Oliver 1981:20). He comments that according to the original definition of the Archaic, it "represents a preceramic horizon" and that "the presence of ceramics provides a convenient marker for separation of the Archaic and Woodland periods (Oliver 1981:21). Others would counter that such an approach ignores cultural continuity and forces an artificial, and perhaps unrealistic, separation. Sassaman and Anderson (1994:38-44), for example, include Stallings and Thom's Creek wares in their discussion of "Late Archaic Pottery." While this issue has been of considerable importance along the Carolina and Georgia coasts, it has never affected the Piedmont, which seems to have embraced pottery far later, well into the conventional Woodland period. The importance of the issue in the Sandhills, unfortunately, is not well known.

diagnostic artifacts include Morrow Mountain, Guilford, Stanly and Halifax projectile points. Middle Archaic diagnostic artifacts were found to occur on 60 of the 196 sites found by Loftfield (1979; see also Braley 1990:7). Phelps (1983:25) also notes that the gradual increase from Paleoindian to Archaic in the Coastal Plain seems to peak during the Middle Archaic Morrow Mountain phase.

Much of our best information on the Middle Archaic comes from sites investigated west of the Appalachian Mountains, such as the work by Jeff Chapman and his students in the Little Tennessee River Valley (for a general overview see Chapman 1977, 1985a, 1985b). There is good evidence that Middle Archaic lithic technologies changed dramatically. End scrapers, at times associated with Paleoindian traditions, are discontinued, raw materials tend to reflect the greater use of locally available materials, and mortars are initially introduced. Associated with these technological changes there seem to also be some significant cultural modifications. Prepared burials begin to more commonly occur and storage pits are identified. The work at Middle Archaic river valley sites, with their evidence of a diverse floral and faunal subsistence base, seems to stand in stark contrast to Caldwell's Middle Archaic "Old Quartz Industry" of Georgia and the Carolinas, where axes, choppers, and ground and polished stone tools are very rare.

The available information has resulted in a variety of competing settlement models. Some argue for increased sedentism and a reduction of mobility (see Goodyear et al. 1979:111). Ward argues that the most appropriate model is one which includes relatively stable and sedentary hunters and gatherers "primarily adapted to the varied and rich resource base offered by the major alluvial valleys" (Ward 1983:69). While he recognizes the presence of "inter-riverine" sites, he discounts explanations which focus on seasonal rounds, suggesting "alternative explanations . . . [including] a wide range of adaptive responses." Most importantly, he notes that:

> the seasonal transhumance model and the sedentary model are opposite ends of a continuum, and in all likelihood variations on these two themes probably existed in different regions at different times throughout the Archaic period (Ward 1983:69).

Others suggest increased mobility during the Archaic (see Cable 1982). Sassaman (1983) has suggested that the Morrow Mountain phase people had a great deal of residential mobility, based on the variety of environmental zones they are found in and the lack of site diversity. The high level of mobility, coupled with the rapid replacement of these points, may help explain the seemingly large numbers of sites with Middle Archaic assemblages. Curiously, the later Guilford phase sites are not as widely distributed, perhaps suggesting that only certain micro-environments were used (Braley 1990; cf. Ward [1983:68-69] who would likely reject the notion that substantially different environmental zones are, in fact, represented).

Recently Abbott et al. argue for a combination of these models, noting that the almost certain increase in population levels probably resulted in a contraction of local territories. With small territories there would have been significantly greater pressure to successfully exploit the limited resources by more frequent movement of camps. They discount the idea that these territories could have been exploited from a single base camp without horticultural technology. Abbott and his colleagues conclude, "increased residential mobility under such conditions may in fact represent a common stage in the development of sedentism" (Abbott et al. 1995:9).

From excavations at a Sandhills site in Chesterfield County, South Carolina, Gunn and his colleague (Gunn and Wilson 1993) offer an alternative model for Middle Archaic settlement. He accepts that the uplands were desiccated from global warming, but rather than limiting occupation, this environmental change made the area more attractive for residential base camps. Gunn and Wilson suggest that the open, or fringe, habitat of the upland margins would have been attractive to a wide variety of plant and animal species.

Another point of some controversy is the idea that the groups responsible for the Middle Archaic Morrow Mountain and Guilford points were intrusive ("without any background" in Coe's words) into the North Carolina Piedmont, from the west, and were contemporaneous with the groups producing Stanly points (Coe 1964:122-123; Phelps 1983:23). Phelps, building on Coe, refers to the Morrow Mountain and Guilford as the "Western Intrusive horizon." Sassaman (1995) has recently proposed a scenario for the Morrow Mountain groups which would support this west-to-east time-transgressive process. Abbott and his colleagues, perhaps unaware of Sassaman's data, dismiss the concept, commenting that the shear distribution and number of these points "makes this position wholly untenable" (Abbott et al. 1995:9).

The Late Archaic, usually dated from 6,000 to 3,000 or 4,000 B.P., is characterized by the appearance of large, square stemmed Savannah River projectile points (Coe 1964). These people continued to intensively exploit the uplands much like earlier Archaic groups with, in North Carolina, the bulk of our data for this period coming from the Uwharrie region. At Fort Bragg 39 of the 196 sites contained Late Archaic components (Loftfield 1979), suggesting a leveling off, or even slight decline, from the earlier Middle Archaic. While the data must be viewed cautiously, they may provide some support to Phelps' (1983:25) contention that the Archaic population stabilized during the Morrow Mountain phase.

One of the more debated issues of the Late Archaic is the typology of the Savannah River Stemmed and its various diminutive forms. Oliver, refining Coe's (1964) original Savannah River Stemmed type and a small variant from Gaston (South 1959:153-157), developed a complete sequence of stemmed points that decrease uniformly in size through time (Oliver 1981, 1985). Specifically, he sees the progression from Savannah River Stemmed to Small Savannah River Stemmed to Gypsy Stemmed to Swannanoa from about 5000 B.P. to about 1,500 B.P. He also notes that the latter two forms are associated with Woodland pottery.

This reconstruction is still debated with a number of archaeologists expressing concern with what they see as typological overlap and ambiguity. They point to a dearth of radiocarbon dates and good excavation contexts at the same time they express concern with the application of this typology outside the North Carolina Piedmont (see, for a synopsis, Sassaman and Anderson 1990:158-162, 1994:35).

In addition to the presence of Savannah River points, the Late Archaic also witnessed the introduction of steatite vessels (see Coe 1964:112-113; Sassaman 1993), polished and pecked stone artifacts, and grinding stones. Some also include the introduction of fiber-tempered pottery about 4000 B.P. in the Late Archaic (for a discussion see Sassaman and Anderson 1994:38-44). This innovation is of special importance along the Georgia and South Carolina coasts, but seems to have had only minimal impact in North Carolina.

Although fiber-tempered pottery has been known from southeastern North Carolina since at least the late 1950s when it was collected from 31CB4, it was not formally defined until South's 1960 survey of the coast (South 1976). Initially it was assumed to be limited to the South Carolina border area, but by the early 1970s Phelps was identifying specimens from the Greene County area (Phelps 1983:26). By the 1980s fiber-tempered wares were recognized from at least 38 sites scattered throughout the coastal plain of North Carolina. Phelps notes, however, that only what might be called Stallings Plain is found, suggesting that "the full-fledged ceramic series with its decorative types did not extend into the South Coastal region" (Phelps 1983:26). The pottery is typically associated with Savannah River Stemmed points, steatite pottery or disks, and grooved axes. The significance of the ware declines dramatically northward to the Tar drainage (Phelps 1983:Figure 1.4) and it is partially on this distribution that Phelps bases the development of two regions within the North Carolina coastal plain.

Fiber-tempered pottery has been reported from only two sites on Fort Bragg and only one site has produced Thom's Creek pottery (Braley 1990:9; Loftfield 1979). Robinson (1986:75) mentions that fiber-tempered pottery, while not

common, is present and especially singles out 31CD151 as worthy of attention.

There is evidence that during the Late Archaic the climate began to approximate modern climatic conditions. Rainfall increased resulting in a more lush vegetation pattern. The pollen record indicates an increase in pine which reduced the oak-hickory nut masts which previously were so widespread. This change probably affected settlement patterning since nut masts were now more isolated and concentrated. From research in the Savannah River valley near Aiken, South Carolina, Sassaman has found considerable diversity in Late Archaic site types with sites occurring in virtually every upland environmental zone. He suggests that this more complex settlement pattern evolved from an increasingly complex socio-economic system. While it is unlikely that this model can be simply transferred to the Sandhills of North Carolina without an extensive review of site data and micro-environmental data, it does demonstrate one approach to understanding the transition from Archaic to Woodland.

Woodland Period

As previously discussed, there are those who see the Woodland beginning with the introduction of pottery. Under this scenario the Early Woodland may begin as early as 4,500 B.P. and continued to about 2,300 B.P. Diagnostics would include the small variety of the Late Archaic Savannah River Stemmed point (Oliver 1985) and pottery of the Stallings and Thoms Creek series. These sand tempered Thoms Creek wares are decorated using punctations, jab-and-drag, and incised designs (Trinkley 1976). Also potentially included are Refuge wares, also characterized by sandy paste, but often having only a plain or dentate-stamped surface (Waring 1968). Others would have the Woodland beginning about 3,000 B.P. and perhaps as late as 2,500 B.P. with the introduction of pottery which is cord-marked or fabric-impressed and suggestive of influences from northern cultures.

Regardless, it is between 4,000 and 3,000 B.P. when Phelps (1983:26-27, Figure 1.2) notes that the coastal plain can be divided into a northern and southern region. Our attention will focus on the southern region, along with brief remarks on the adjacent Piedmont.

Along the southern coastal plain a northern-influenced ware which Loftfield (1976:149-154) terms New River is associated with the Early Woodland. Essentially identical to the Deep Creek pottery identified by Phelps (1983:29-31) for the north coastal area, this pottery is tempered with coarse sand making it feel sandy to the touch.[4] The pottery, according to Loftfield may be "thong-marked" (i.e., simple stamped), cord-marked, net-impressed, fabric-impressed, and plain (often smoothed). Phelps suggests subsuming the New River into Deep Creek "in order to standardize typology across the Coastal Plain" (Phelps 1983:31). This has apparently not attracted much support, although frankly neither has the use of Loftfield's New River type. One factor which certainly complicates such efforts is the near total absence of excavation data coupled with good radiocarbon dates (a problem admitted by Phelps [1983:32]). Little is known about possible cultural associations, although there is some limited evidence that at least some of the small variants of the Savannah River Stemmed may be found with Early Woodland materials. For example, Oliver notes the co-occurrence of Gypsy Stemmed points with Swannonoa pottery, dated to about 200 B.C. at the Warren Wilson site (Oliver 1981:185). John Davis reports the association of a Gypsy Stemmed point with Yadkin pottery (although Badin is also reported) radiocarbon dated to between 410 B.C. and A.D. 10 at 31FY549 (Davis 1987:1, 5).[5] The

[4] In North Carolina, as in South Carolina, type descriptions tend to be loosely written with attributes poorly defined. To further complicate typological issues, there is almost no petrographic or chemical studies of these wares. Consequently, descriptive references such as "sandy," "coarse," and "fine" are meant only as general statements.

[5] Although very interesting, this feature should be cautiously interpreted since the carbonized material came from a depth of only 4 to 12 cm below the ground surface and Davis notes that the feature was somewhat dispersed by "natural processes." Further, the association

large triangular Roanoke point (South 1959:146-148) is likely also associated with Early Woodland ceramics.

In spite of our near total ignorance of Early Woodland sites, many suggest that the subsistence economy was based primarily on deer hunting and fishing, with supplemental inclusions of small mammals, birds, reptiles, and shellfish. This is based on the continuation of a generalized Late Archaic pattern, which may or may not be appropriate.

Further to the west, in the Piedmont, the Early Woodland is marked by a pottery type defined by Coe (1964:27-29) as Badin.[6] This pottery is identified as having very fine sand in the paste with an occasional pebble. Coe identified cord-marked, fabric-marked, net-impressed, and plain surface finishes. Beyond this pottery little more is known about the makers of the Badin wares than is known about those who made New River wares.

Somewhat more information is available for the Middle Woodland, typically given the range of about 2,300 B.P. to 1,200 B.P. The best data concerning Middle Woodland Coastal Zone assemblages comes from Phelps' (1983:32-33) work in the north coastal region and can be only cautiously extended to either the southern coast or the Sandhills. The pottery is his Mount Pleasant series which includes very coarse quartz temper and exhibits fabric-impressed, cord-marked, net-impressed, and plain surface treatments. Associated items include small varieties of the Roanoke Large Triangular points, Yadkin points, sandstone abraders, shell pendants, polished stone gorgets, celts, and woven marsh mats. Significantly, both primary inhumations and cremations are found: It seems to be characterized by a pattern of settlement mobility and short-term occupation. Phelps (1983), for example, notes a decrease in the number of small sites along the smaller tributary streams and an increase in the number of sites along major streams and estuaries. He suggests the presence of seasonal subsistence camps (focused on either coastal shellfish or riverine species further inland) coupled with sedentary villages. The shift in settlement patterns, according to Phelps, may be related "to increased dependence on domesticated plants" (Phelps 1983:35), a conclusion with very little support.

In the southern region the dominant pottery is either the Cape Fear or Hanover wares, although very little is known about the groups which produced these ceramics. The Cape Fear pottery is sand tempered and surface decorations include cord-marked, fabric-marked, net-impressed, and plain. Phelps equates the Cape Fear wares with his Mount Pleasant pottery. He notes that:

> the Cape Fear ceramic types described by South (1976:18) are essentially similar to the Mount Pleasant series and Haag's [1958] "grit-tempered," and both of these have been included in the Mount Pleasant definition to provide a comprehensive ceramic horizon across the Coastal Plain (Phelps 1983:35).

The Hanover pottery is distinguished by clay and sherd temper with some suggestion that the majority of the temper is composed of crushed sherds. The Hanover wares are fabric-impressed, cord-marked, and plain (see South 1976:16-18). Loftfield, rather than accepting South's Hanover type, chose to develop the Carteret Series (Loftfield 1976:154-157). Loftfield also offers a type description for the Onslow Series, a crushed quartz tempered ware with cord-marked and fabric-impressed surfaces. He noted, however, that Onslow pottery was found at only six sites and its

of what is reported as both Badin and Yadkin pottery in the same feature may help account for the relatively large radiometric span. Billy Oliver (personal communication 1996), however, reports that another similar feature was also recovered from this site, although it has not been reported.

[6] The ceramics suggest clear regional differences during the Woodland which seem to only be magnified during the later phases. Ward (1983:71), for example, notes that there "marked distinctions" between the pottery from the Buggs Island and Gaston Reservoirs and that from the south-central Piedmont.

chronological position, while placed in a Middle Woodland context between his Carteret and White Oak series, was poorly understood (Loftfield 1976:199). This pottery seems to have some superficial resemblance to the Piedmont Yadkin series (discussed below), but is rarely referred to in publications today.

One of the few distinctive features of the coastal plain (and Sandhills) Middle Woodland[7] appears to be the presence of low sand burial mounds. One of the most thorough overviews is offered by MacCord (1966), although Wilson (1982) offers a fresh review and a detailed assessment of one such mound. Artifacts are typically sparse, consisting of platform pipes, an occasional cord marked, sand-tempered sherd, celts, shell beads, copper beads, and a few triangular projectile points. Human remains include cremations, bundle burials, multiple burials, and flexed burials. The frequency of secondary burials suggest that a number of individuals were interred only after some form of reduction. Further complicating analyses, the human remains are frequently in very poor condition (the probable result of the acid soils and loose sands).

Wilson's (1982) study of the McFayden Mound, Bw°67, is particularly interesting since she was able to roughly calculate the life expectancy of the population — 19.9 years at birth. While this estimate seems low when compared to other prehistoric populations it is close agreement with that found at more Northern ossuaries. It was also possible to reconstruct the population size which is, of course, dependent on the number of years of deaths represented in the mound. Relying on ethnohistoric data, Wilson suggests a population size of around 200 individuals, a seemingly reasonable estimate for Woodland models which might focus on macro-bands.

Some have suggested that this elaboration of burial customs suggests changes in social organization and that it also implies a more sedentary lifestyle. This, in turn, has led to discussions of possible horticultural activities during the Middle Woodland. We concur with Ward's (1983:73) assessment that while there is certainly convincing evidence of horticulture in other regions, there is virtually no evidence of domesticated plant foods in North Carolina before, at the earliest, the Late Woodland.

Moving to the Piedmont the dominant Middle Woodland ceramic type is typically identified as the Yadkin series. Characterized by a crushed quartz temper the pottery includes surface treatments of cord-marked, fabric-marked, and a very few linear check-stamped sherds (Coe 1964:30-32). It is regrettable that several of the seemingly "best" Yadkin sites, such as the Trestle site (31AN19) explored by Peter Cooper (Ward 1983:72-73), have never been published.

At Fort Bragg the Middle Woodland period (2,300 B.P. to 1,200 B.P.) is better represented than the earlier Woodland phase. Over 5% of the diagnostic sites produced Yadkin projectile points (Braley 1990). Undifferentiated Woodland artifacts were found at 115 (or 58.7%) of the 196 sites identified by Loftfield (1979) which suggests a great increase either in population or land use in this area (Braley 1990).

In some respects the Late Woodland (1,200 B.P. to 400 B.P.) may be characterized as a continuation of previous Middle Woodland cultural assemblages. While outside the Carolinas there were major cultural changes, such as the continued development and elaboration of agriculture, the Carolina groups settled into a lifeway not appreciably different from that observed for the previous 500-700 years. From the vantage point of

[7] Their association with the Middle Woodland, in many cases, is tenuous. Phelps, in fact, notes that he places them with his discussion of Cape Fear "because their content and occurrence elsewhere in the eastern Woodlands area" (Phelps 1983:35). There are some good reasons to suggest that they span a greater time period, perhaps into the Late Woodland. Wilson (1982:161-162), for example, presents some relatively strong evidence that at least one mound, Bw°67, may date as late as A.D. 1300. This is supported by the presence of a stone pipe comparable to those of found at Uhwarrie phase sites, the presence of Adam's Creek pottery (possibly proto-historic), and cranial measurements which strongly resemble Piedmont Siouan populations.

the Middle Savannah River Valley Sassaman and his colleagues note that, "the Late Woodland is difficult to delineate typologically from its antecedent or from the subsequent Mississippian period" (Sassaman et al. 1990:14). This situation would remain unchanged until the development of the South Appalachian Mississippian complex (see Ferguson 1971).

Phelps would challenge this view, at least for the north coastal region, holding instead that "from A.D. 800 onward archaeological assemblages of the Late Woodland period in the North Coastal region can be related to ethnohistoric information and studies, thus providing the relative comfort of social and linguistic identities and the use of the direct historical approach" (Phelps 1983:36). In the north Phelps has done a superb job identifying the Carolina Algonkians (on the coast) and the Tuscarora (on the interior). The Algonkians are associated with the Colington phase and the associated pottery is shell-tempered with fabric-impressed, simple-stamped, plain, and incised surface treatments (Phelps 1983:36, 39-43; see also Gardner 1990; Phelps 1981, 1982, 1984). The inland Tuscarora appear to have been producing the Cashie series pottery, which is tempered with grit and pebbles and has fabric-impressed, simple-stamped, incised, and plain surfaces (Phelps 1983:37-39, 43-47).

For the south coastal region information is considerably less secure and ethnohistoric placement is confounded by a seeming mix of Siouan, Algonkian, and perhaps even Muskhogean linguistic and cultural traits. South offers a brief synopsis of enthohistoric data for the south coast (1976:5-8) and associates these mixed groups with his Oak Island complex, which Phelps (1983) adopts. Loftfield found similar evidence, although he chose to designate the material White Oak (Loftfield 1976:157-163). One of the earliest detailed south coastal studies was Loftfield's examination of the Uniflight site in Onslow County (Loftfield 1978). Loftfield found a late spring/early summer period occupation and went on to suggest a seasonal adaptive cycle for the region which included dispersal to the estuaries. The predominant food remains, according to Loftfield, were shellfish. His excavations also revealed the village, with two houses discernable. They measured about 13 m in length and 6 m in width, with posts placed at 10 to 20 cm centers. Perhaps the best evidence associating the Oak Island wares with a specific ethnic group is the research conducted at a New Hanover County ossuary where the skeletal population was identified as Siouan (Coe et al. 1982).

Phelps (1983:48) notes that Loftfield's work has been concentrated adjacent to the presumed regional border and that additional work is necessary. He also remarks that it seems likely there may be different interior and coastal expressions for the Oak Island phase.

Moving into the Piedmont, the Late Woodland is typically associated with small triangular points such as Uwharrie, Caraway, Pee Dee, and Clarksville (Coe n.d., 1964;49; Oliver 1985; South 1959:144-146). The characteristic pottery is the Uwharrie series which contains crushed quartz (one characteristic of which is its tendency to protrude through the wall of the pottery). This series included cord-marked and net-impressed surface treatments. The ware was described by Coe in the unpublished Poole site report (Coe n.d.).[8] This pottery appears to represent an evolution from the earlier Yadkin wares (Coe 1995:156). Of equal interest is a radiocarbon date of A.D. 1610, suggesting that this pottery lasted well into the protohistoric. Coe also notes that "Town Creek and other villages situated along the fall line between the Piedmont and the Coastal Plain seem to have formed a southern boundary for the production and use of Uwharrie ware," which he suggests was made by the ancestors of the Sara, Tutelo, Occaneechi, Saponi, and Keyauwee (Coe 1995:158). If this is correct, Uwharrie pottery may be exceedingly rare in the Fort Bragg area.

[8] This study was intended to be published under a monograph series entitled, *University of North Carolina Laboratory of American Archaeology Publications*, but was never completed. The work was conducted in 1936, although the ensuing report is undated.

Unfortunately, excavated sites are as difficult to come by as well published and distributed type descriptions. Results of excavations at one of the more interesting Uwharrie sites, Yd'1 (Coe 1972), have never been published. This site was first explored in 1957, at which time 28 human burials, two dog burials, and 42 features were recovered. In 1972 further work identified 83 features, although no additional burials were encountered. The features were classified as storage pits (with either straight walls and flat bottoms or bell-shaped), hearths, and refuse pits.

Moving from the Late Woodland into the proto-historic period at least some of the clouds surrounding the Piedmont dissipate, largely as the result of Wilson's (1983) extraordinary efforts to make sense out of nearly 50 years of confusion. There is some considerable evidence that the descendant of the Uwharrie pottery is the Dan River Series (Lewis 1951:242-259; Gardner 1980:54-55; Wilson 1983:249-267, 270-277, 282-296). One of the more interesting conclusions of Wilson's work is that:

> the pottery from the Catawba River during the Late Prehistoric period is markedly different from that of the Dan River region. Bowl forms, surface finishes and decorations differ significantly between the two areas. The presence of burnished and complicated stamped surfaces, cazuella and hemispherical bowl forms, the use of circular reed punctations to create "pseudo-nodes," and applique rim strips, all illustrate the direct influence that emanated from the Pee Dee, and Pee Dee related, culture (cf. Reid 1965, 1967) of the Wateree River in South Carolina, and the Little River section of the Pee Dee River in south-central North Carolina. . . . An attempt to incorporate these foreign modes of surface finish, vessel shape and decoration, similar to that illustrated in the 31Id31 material, is not evidenced at this early date in the Dan River assemblage. The differences between the Dan River and the Catawba River collections in the placement of decorations, the decorative elements that occur, and the association of these designs with vessel forms and surface finish, underscores this interaction dichotomy (Wilson 1983:315).

Curiously, South (1972) makes a somewhat similar observation for the coastal plain linguistic groups, noting considerable cultural attributes cross-cutting the historic Muskhogean and Siouan linguistic boundary. Archaeology at the Payne site in neighboring Moore County also found evidence of possible interaction between Pee Dee and Siouan cultures. Both Pee Dee and Uwharrie pottery were found at the site, possibly suggesting an intrusion of the South Appalachian Mississippian into this otherwise seemingly Siouan village. Further work at such border sites may help explain the introduction and use of corn by Siouan groups as well as the acquisition of a carved paddle stamped pottery tradition (Mountjoy 1989:19-20).

Widmer (1975) and Loftfield (1979) have suggested that settlement patterns on the Inner Coastal Plain did not change from the Archaic period onward, because it was believed that the nutrient deficient soils were not well suited for agriculture. Braley (1989) found, however, that the Late Woodland period sites at Fort Bragg do exhibit differences from the earlier period since there were more Woodland sites than any other type and because there were minor, but statistically significant differences in the sizes of upland and lowland Woodland sites. Although agriculture may not have been a significant aspect of Late Woodland life, the populations appear to have become more sedentary and the lowland, river-oriented terrain took on greater importance (Braley 1990:12).

South Appalachian Mississippian

The Pee Dee culture was defined through the excavations of Joffre Coe at Town Creek which

is located about 65 km west of Fort Bragg (Coe 1995; Reid 1967). The site, generally accepted to represent a northern intrusion of a Mississippian chiefdom, was originally dated from about A.D. 1550 to 1750, although more recent analyses suggests a date more likely between A.D. 900 and 1400 (Coe 1995:159).

Braley (1990) indicates that Pee Dee ceramics, which are typically diagnostic of the Mississippian period, are lacking at Fort Bragg. The lack of Pee Dee ceramics suggest that the prehistoric or proto-historic societies of the Fort Bragg area were relatively unaffected by these cultural events (Braley 1990:12). It is also possible that areas which would typically contain large Mississippian sites were not examined by Loftfield to any degree. Large river terraces associated with the Lower Little River may not have contained many fire breaks or other exposures to provide easy discovery. It is possible that future work in these areas will provide evidence for Mississippian occupation.

Historic Overview

It was nearly a century after the failure of the Roanoke Island colony in the 1580s before a permanent, effective settlement of North Carolina was begun. The colonization of North Carolina was not well promoted by the English due to its shoreline being inaccessible. They, therefore, turned their attention toward Charleston and the Chesapeake region. As a result, North Carolina settlers most often came over land by way of other colonies such as South Carolina, Virginia, and Pennsylvania (Meyer 1961:69-71). These settlers were described as the "dregs and gleanings of all the other English Colonies" (McCusker and Menard 1986:170).

The only river navigable by sea-going ships was the Cape Fear, but it was not utilized until the 1720s. This was primarily due to two reasons: the Tuscarora Indians which occupied the region were not subdued until about 1715 and during the 1710s pirates controlled the Cape Fear and used it as a base of operations (Rankin 1989; Schonhorn 1972:137). Two cities developed in the 1720s at the mouth of the Cape Fear (Brunswick and Wilmington) which helped to provide a viable transportation and distribution network. By 1724, the land office for the Cape Fear region opened and settlement began to take place along the river. By the 1730s Scottish Highlanders began to settle the Cape Fear region near present day Fayetteville (Meyer 1961:71-72).

Lefler and Newsome (1973) state that there were a number of Ulster Scots (or Scotch-Irish) who also settled the area although it appears that the bulk of their grants and purchases were in present day Sampson and Duplin counties. Other Ulster Scot settlements were on the Yadkin, Catawba, and Eno rivers. Oates (1972:14) states that there was an Irish colony on the upper Northeast Cape Fear in 1736, but does not provide details.

It is interesting to note that the Highlander culture was so dominant and persistent in the area that in 1828 a tourist noted that the

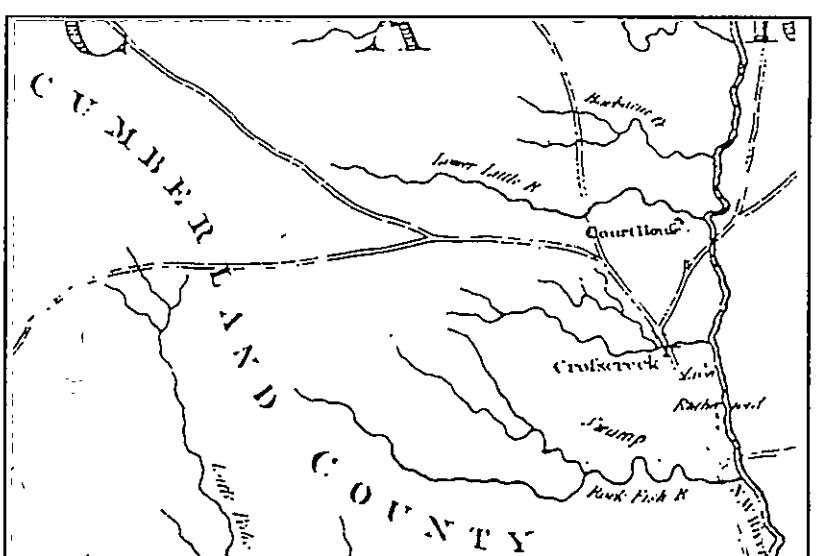

Figure 16. Mouzon's *An Accurate Map of North and South Carolina* showing the Fort Bragg area in 1775.

post office had to hire a clerk who could speak both English and Gaelic (Ross 1965:300). Oates (1972:621) notes that even up to the Civil War era that there were a few surviving Gaelic speaking inhabitants. The Longstreet Church cemetery on Fort Bragg contains at least one antebellum epitaph in Gaelic (Kern and Boyko 1996; Ross 1965:300).

One thorough exploration of the importance of British folkways in the development of the American culture is Hacket's (1989) *Albion's Seed* in which he explores the four principal migrations. While the Highland Scots is not one of these, his brief comments are worth repeating:

> another colonial culture developed in North Carolina's Cape Fear Valley, where Highland Scots began to arrive circa 1732. Many followed after the '45 Rebellion, and by 1776 their numbers were nearly as large as the white population in the South Carolina low country. Other ethnic groups also settled in the Cape Fear Valley, but so dominant were highlanders that Gaelic came to be spoken in this region even by people who were not Scots. . . . Even in the twentieth century, the Cape Fear people sent to Scotland for ministers, who were required to wear the kilt, play the pipes, and preach in Gaelic.
>
> The political history of the culture was very different from its border neighbors. During the American Revolution the borderers were mostly Whigs; Scottish highlanders were mainly Tory. In the new republic, the backsettlers tended to vote Democratic-Republican, and the highlanders of the Cape Fear Valley voted Federalist. Historian Duane Meyer writes that these people were "remarkedly consistent in choosing the losing side." They never became part of the solid south; in 1900 they cast their ballots for McKinley rather than Bryan. Here was another culture that preserved its separate identity into the twentieth century (Hacket 1989:818-819).

During the early period settlement grew up along the rivers and creeks. The community of Argyle grew up along an early road which closely follows the alignment of modern-day Longstreet Road. However, road-oriented settlement was unusual since much of the sandy upland soils were unsuitable for productive farming. According to Hudson (1984:53) the Blaney-Gilead-Lakeland soil association which dominates the north half of Hoke County is not classified by the U.S. Department of Agriculture as prime farmland.[9] These soils are also not listed as being state or locally important farmland, which means while not prime farmland, they are suited to producing crops economically only when managed according to modern farming methods (Hudson 1984:53). It seems likely that the Argyle community was more of a mercantile district.

Cumberland County, from which Harnett County was created in 1855, was established in 1754 (Corbitt 1950). The first settlement took place near the mouth of Cross Creek and by 1760 the settlement was formally set apart. In 1762 the town of Campbelltown was established near the Cross Creek settlement, and in 1778 the two towns were combined. In 1783 the name was changed to Fayetteville (Lefler and Powell 1973:92). The town is situated on the west bank of the Cape Fear River at the head of its navigable point. Wilmington is 192 km by water, making Fayetteville's position, both in relation to Wilmington and to the interior, valuable during the early historic period.

[9] Prime farmland is defined as containing soils that, "are best suited to producing food, feed, forage, fiber, and oilseed crops. Such soils have qualities that are favorable for the economic production of sustained high yields of crops" (Hudson 1984:53).

During the early half of the eighteenth century, settlement in the area was primarily along the Cape Fear river, but as these areas became populated settlement began to occur on the larger streams. Land grants and purchases secured by Highlanders between 1733 and 1775 are illustrated in Figure 17, showing that by the end of the colonial period the area was well settled, at least along the waterways.

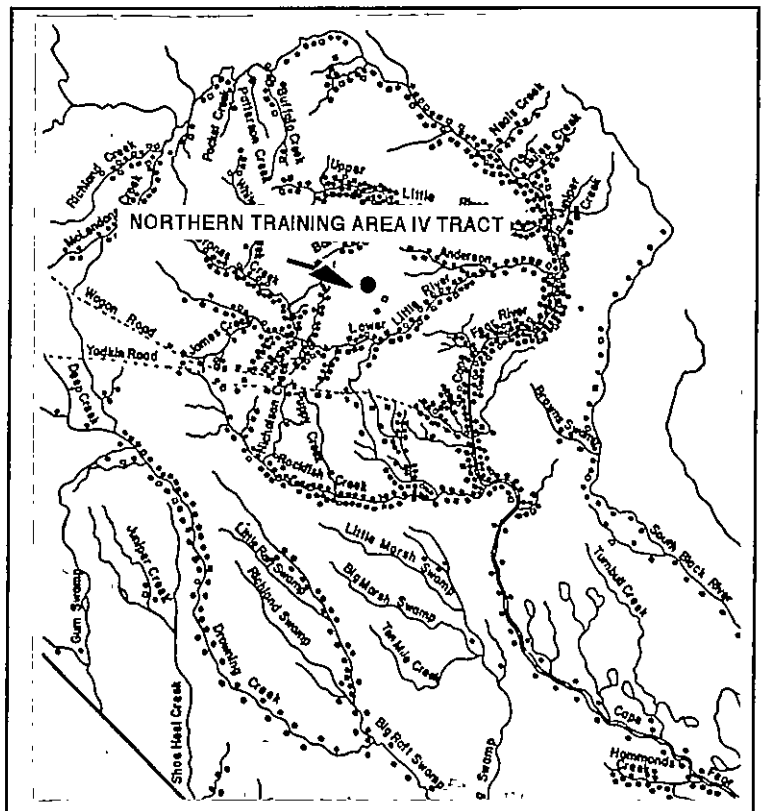

Figure 17. Land grants and purchases obtained by Highlanders in the project areas between 1733 and 1775 (adapted from Meyer 1961:Map VIII).

The large, vast tracts of long leaf pine spurred on the production of naval stores during the colonial period. These forest resources also led the people of the Cape Fear region to produce items such as lumber, barrels, and other wood products. Crops included corn, rice and other grains. In addition, livestock were raised to supplement the income of the people (Lefler and Powell 1973:93; see also Hill 1983, and McLean and Sellon 1978).

The growth and expansion of the backcountry during the Proprietary period after 1750 created a number of problems including the creation of new counties and equal representation in the legislature. The backcountry citizens complained bitterly about eastern domination since planter aristocracy in the east dominated the control of the provincial government. The unit of representation was the county and there were far more counties in the east than in the rapidly growing west. As population increased in the backcountry, the legislature created more counties in the west, but also created additional counties in the east to guarantee that control would not be lost to the back country. There were nine boroughs in the state and only two of these (Salisbury and Hillsborough) were in the Piedmont. The rest (Bath, Brunswick, Edenton, New Bern, Campbelltown, Halifax, and Wilmington) were in the east. Tension between east and west mounted in 1766 by the passage of an act to establish a permanent capital. The new capital was an eastern borough — New Bern (Lefler and Powell 1973:223-224).

Out of this tension grew a backcountry movement known as the Regulator movement. This name was adopted because their main goal was to obtain the right to regulate their own government. A number of incidents occurred including attacks on court officials in Anson and Johnston counties, and disorders in Rowan and Edgecombe counties. This movement was interrupted by the American Revolution and its aftermath (Lefler and Newsome 1973:236-239).

Cross Creek did see some minor action during the war. Governor Martin, who had previously fled his office due to lack of British military support, worked out a plan for the British conquest of North Carolina. Martin was to raise approximately 9,000 Loyalists. Lord Cornwallis was to sail from Ireland with seven regiments of British regulars and take command of both groups which were to combine in the Wilmington-Brunswick

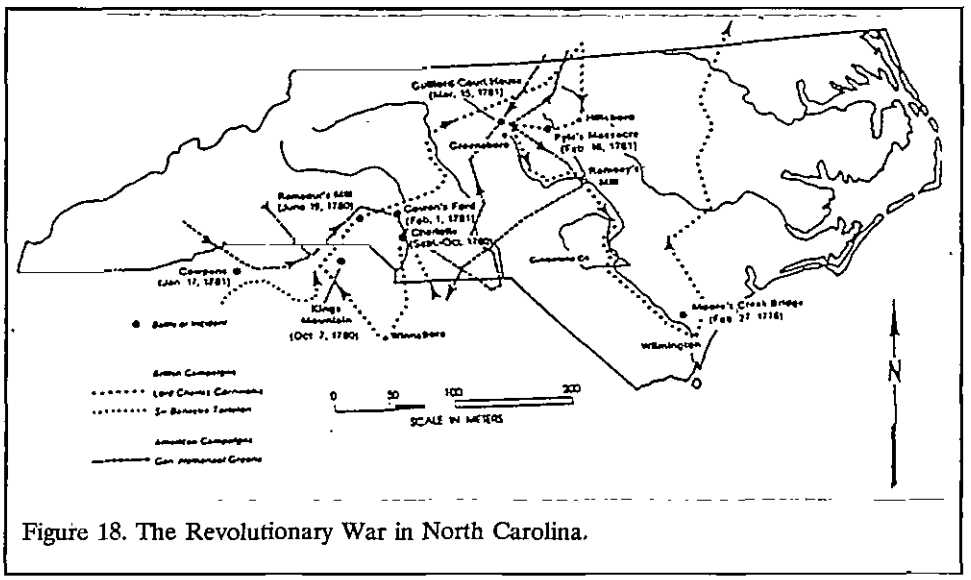

Figure 18. The Revolutionary War in North Carolina.

area by mid-February of 1776. In January of that year the plan was approved. On January 10, Governor Martin issued a proclamation asking all loyal subjects to "unite and suppress the rebellion" in North Carolina. In mid-February 1,600 Highlanders led by Donald McDonald were assembled at their rendezvous at Cross Creek and then began their march toward Wilmington. Colonel James Moore, who directed the Whig forces, was determined to keep the enemy from reaching the port. A secondary objective was to take possession of Cross Creek. To achieve these goals, Moore marched his forces to Elizabeth Town; Colonel Alexander Lillington and Colonel James Ashe were ordered to reinforce Caswell and secure Moore's Creek Bridge, 29 km north of Wilmington since the Loyalists would have to cross this bridge to reach Wilmington (Figure 18).

The Whig forces reached the bridge before the Loyalists and set a number of traps which made crossing the bridge difficult and added confusion to the ranks. For three minutes the Loyalists were swarmed with swan-shot and musket fire. Soon the battle was over with an overwhelming Whig victory (Lefler and Powell 1973:275-278).

Two events which directly affected the Fort Bragg reservation occurred in 1781 as Lord Cornwallis retreated through Cumberland County on his way to Wilmington from Guilford Courthouse, and when the conflicting loyalties of local Whigs and Tories resulted in the Piney Bottom Massacre.

As Cornwallis was being pursued by Colonel Henry Lee he passed along the edge of Fort Bragg along the Lower Little River. Having no provisions left, the soldiers began to forage the area of Cumberland County. Cornwallis and his troops crossed into what is now Fort Bragg at Monroe's Bridge. While his troops continued on their way, local tradition has it that Cornwallis diverged from the group and headed to Malcolm Smith's house in the Argyle area on present day Longstreet Road where he visited (Nye n.d.:16-21). Unfortunately, this visit is based primarily on local lore.

The Piney Bottom Massacre occurred on August 4, 1781 as a result of a surprise attack on the Whigs by local Tories led by John McNeill (Nye n.d.:22-26). Seven men were killed, one was wounded, and a number of houses were pillaged or burned. Nye (n.d.) locates the massacre site where Morganton Road crosses Piney Bottom Creek although Wicker (1966) disputes this location since Morganton Road was not in place until 1794. He suggests that the massacre occurred nearer to what is today Holland Drop Zone.

The war left North Carolina in a bad situation. It was in debt, its money was worthless, and its English markets were lost. Most of the state's population led a simple, low-level economic existence which made the effects of the war more acute than in surrounding, richer states. Gradually export trade reached a new high. New England replaced Britain as the major customer for goods. Major exports included corn, lumber, and tobacco.

Population steadily increased after the war. Census reports from 1790 to 1820 gave the population as 393,751; 478,103; and 638,829 (Lefler and Newsome 1973:266-270).

During the antebellum period there was a remarkable increase in the state's two major cash crops—tobacco and cotton. Agricultural expansion and prosperity were partly due to a systematic movement to improve farming methods and rural life which resulted in the publication of journals such as the *Carolina Cultivator* and *North Carolina Planter* (Lefler and Newsome 1973:390-392). In 1840 the county's products were listed as 6,037 bushels of wheat, 16,577 bushels of oats, 3,019 bushels of rye, 291,630 bushels of corn, 459,747 pounds of cotton, 16,800 pounds of wool, 1,794 barrels of turpentine, and 78,540 dollars worth of lumber (Wheeler 1925:124).

As expressed in the quantity of turpentine and lumber listed above, naval stores were important to the area economy. North Carolina ranked number one as the world's foremost producer of naval stores from 1720 to 1870 (Lefler and Newsome 1973:97). The longleaf pine, which was plentiful in the study area, was the basic resource needed for the industry. Many farmers would produce naval stores during slow agricultural seasons or in bad weather and operations ranged from small to large. On large operations, labor was organized on the task system, much like that found at the Carolina rice plantations.

Frederick Law Olmsted passed through this area on a stage coach road from Raleigh to Fayetteville in 1853. His account of the terrain was precise, like that of an environmental surveyor:

> the road was a mere opening through a forest of the long-leafed pine; the trees from eight to eighteen inches in diameter, with straight trunks bare for nearly thirty feet, and their evergreen foliage forming a dense dark canopy at that height, the surface of the ground undulating with long swells, occasionally low and wet. In the latter case there was generally a mingling of deciduous trees and a watercourse crossing the road, with a thicket of shrubs. The soil sandy, with occasionally veins of clay; the latter more commonly in the low ground, or in the descent to it. Very little grass, herbage, or underwood; and the ground covdred, except in the road, with fallen pine-leaves. Every tree, on one, two, or three sides, was scarified for turpentine. In ten miles, I passed half a dozen cabins, one or two small clearings, in which corn had been planted, and one turpentine distillery (Olmsted 1953:138).

His observations concerning many of the region's people were no less sharp:

> The negroes employed in the turpentine business, to which during the last week I have been giving some examination, seem to me to be unusually intelligent and cheerful, decidedly more so than most of the white people inhabiting the turpentine forest. Among the latter there is a large number, I should think a majority, of entirely uneducated, poverty-stricken vagabonds. . . . They are poor, having almost no property but their own bodies; and the use of these, that is, their labour, they are not accustomed to hire out statedly and regularly, so as to obtain capital by wages, but only occasionally by day or job, when driven to it by necessity. A family of these people will commonly hire, or "squat" and build, a little log cabin, so made that it is only a shelter from the rain, the sides not being chinked, and having no more furniture or pretension to comfort than is commonly provided a criminal in the cell of

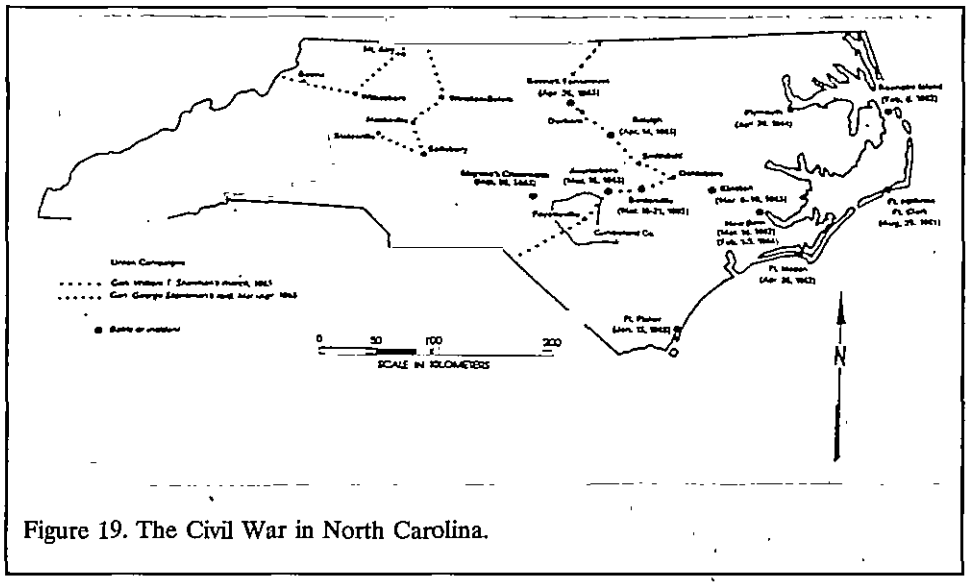

Figure 19. The Civil War in North Carolina.

> a prison. They will cultivate a little corn, and possibly a few rows of potatoes, cow-peas, and coleworts. They will own a few swine, that find their living in the forest (Olmsted 1953:146-147).

What he described as North Carolina's "proverbial reputation for the ignorance and torpidity of her people" he attributed to "the general poverty of the soil in the eastern part of the state," certainly a reference to the Sandhills and Inner Coastal Plain (Olmsted 1953:148).

Prior to Harnett County's formation in 1855, the area experienced a slow population growth. In 1790 there were 8,671 inhabitants including 6,407 whites, 2,180 slaves, and 83 free blacks. The greatest jump in population occurred between 1810 and 1820 when the population grew from 9,385 to 14,446 with a 29% increase in the white population, an 83% increase in the free black population, and 41% increase in the slave population. This increase is probably due to the expansion and prosperity of agriculture. However, given the poor soils found in the Fort Bragg area, this population growth probably occurred elsewhere in the county, perhaps closer to Fayetteville.

There was an increase in manufacturing establishments during the antebellum as well. From 1850 to 1860 these establishments increased from 2,663 to 3,689. Yet, in 1860 Harnett County had only 24 turpentine distilleries and no cotton mills or iron works (Lefler and Newsome 1973:397-398). Although notable economic advances had occurred in the state after 1840, North Carolina was still relatively poor by the time of the Civil War. It was rural and isolated, and its coast was dangerous and without a good port (Lefler and Newsome 1973:402). Cumberland County's population in 1850 was 12,447 whites, 7,217 slaves; and 946 freedmen (Wheeler 1925:124).

The only military action to take place in the project area during the Civil War was during General William T. Sherman's march in 1865. While Sherman's army was moving north from Savannah to meet Grant's army in Virginia, they passed through Fayetteville (Figure 19), destroying the Confederate Arsenal on March 11. Constructed between 1836 and 1859, this was one of the South's most important military depots (Barrett 1963:311-317; Grunden et al. 1995:15; Lefler and Newsome 1973:459).

Immediately affecting the Fort Bragg reservation was the Battle of Monroe's Crossroads about 17 km southwest of the North Training Area IV survey tract. A skirmish occurred early on March 10, 1865 when a surprise attack by Confederate forces, under the command of General Wade Hampton, was made on Charles Monroe's house, the temporary headquarters of Brigadier-General H. Judson Kilpatrick. (Barrett 1963:301-317; Guernsey and Alden 1977:720 [1866]; Nye n.d.:42-61). The battle took place in an

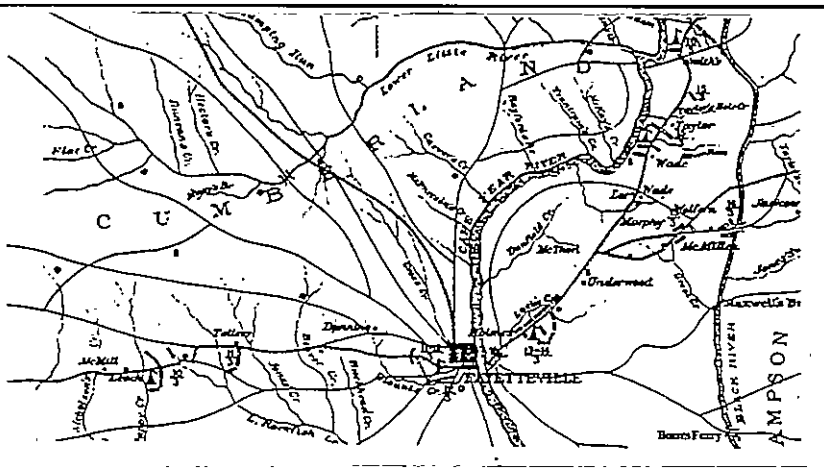

Figure 20. Vicinity of Fayetteville and Fort Bragg in March 1865 (adapted from *Atlas to Accompany the Official Records of the Union and Confederate Armies*, Plate LXXX, Number 8).

area encompassing two plantations or farms — Rocky Mount and Green Springs. Although the attack initially favored the Confederates, the Federal troops rallied and retook the camp. Perhaps most importantly, by this time the war was already lost and the battle is little more than a footnote in the tragic conflict.

Immediately after the war, cotton prices peaked, causing many Southerners to plant cotton using free labor, in the hope of recouping losses from the war. The hiring of freedmen began immediately, with variable results. They began with a wage labor system established by the Freedmen's Bureau. Gradually owners turned away from wage labor contracts to two kinds of tenancy — sharecropping and renting. While very different, both succeeded in making land ownership very difficult, if not impossible, for the vast majority of Blacks. Sharecropping required the tenant to pay his landlord part of the crop produced, while renting required that he pay a fixed rent in either crops or money (Orser 1988).

Smith provides a description of the poor soils found in the Sandhills region:

> In the midst of the large bodies of sand-hill lands there are occasional tracts of a fair grade of cultivatable land, generally found on or near the water courses. The sand-hill soils proper will produce almost nothing; they furnish, however, a scant pasturage in the swampy tracts which abound along the sluggish streams. The yaupon and the scuppernong grape flourish even in these sand wastes (Smith 1880:548).

Although the county's population grew up through the twentieth century, the poverty of the Sandhills soil deterred any large scale settlement of areas away from creeks and rivers. Smith (1880) describes the location of cultivable lands. He states that the rivers and creeks have wide areas of bottom lands:

> or are flanked by swamps or oak and pine flats, and on these are made crops of corn, potatoes and rice. Cotton is grown on the better class of uplands of mixed oaks and pines, which are interspersed among the sandy tracts. The forests are open and park-like .... In the midst of the large bodies of sand-hill lands there are occasional tracts of a fair grade of cultivatable land, generally found on or near the water courses (Smith 1880:548).

By the turn of the century, Harnett County's population was listed as 9,453 whites and 4,274 blacks with a total population of 13,700 (State Board of Agriculture 1986:328). The town of Fayetteville, in nearby Cumberland County, grew rapidly after the introduction of a Norfolk and Southern railway line connecting Fayetteville to

Raleigh in 1911, paralleling the history of many Southern communities (Lefler and Newsome 1973:586).

The military base at Fort Bragg near Fayetteville was established in 1918 as a field artillery training center. Covering around 60,000 ha, largely in Cumberland and Hoke counties, and named for General Braxton Bragg, Confederate corps commander, it was the largest military reservation in the United States. The land was purchased primarily because it was cheap since the soils were poor. For all the reasons that farmers were uninterested in the area and willing to sell, government officials were interested. In 1922 it became a permanent Army post, and in the 1940s it was described as having:

> a complete system of municipal and recreations facilities, a chapel, and a school for children; the buildings are modern, built of brick and stucco. The post organization is made up of four regiments of field artillery with latest equipment. A field artillery board tests experimental matérial on the firing range. Pope Field, the Air Corps station, is garrisoned by Flight C, 16th Observation Squadron, and the Second Balloon Squadron. The landing field has a mile-long runway.
>
> In summer the Reserve Officers Training Corps comes to Fort Bragg for training, units of the North Carolina National Guard encamp for two weeks, and the Citizens Military Training Camp is conducted. Since the establishment of the Civilian Conservation Corps in 1932, Fort Bragg has been headquarters of District A (Federal Writers' Project 1988:326).

In 1952 the 1st Special Operations Command was established and Fort Bragg became the Headquarters for Special Forces, Rangers, and Civil Affairs and Psychological Operations. It is also the home of 18th Airborne Corps, the largest corps in the world, as well as the home of the 20th Engineering Brigade, the 16th Military Police Brigade, the 18th Field Artillery Brigade, the 35th Signal Brigade, the 52nd Military Intelligence Group, and the 1st Corps Support Command (*Charlotte Observer*, May 20, 1984). Fort Bragg has become the largest camp of its kind in the nation, leading to tremendous growth of the surrounding region.

Camp Mackall's military history is somewhat more recent. The post was established in April 1943 when over 26,000 ha of property was transferred from the Secretary of the Interior to the Secretary of War for the purpose of training airborne combat units. The cantonment at Camp Mackall, which included an airfield and nearly 2,000 structures, was used by the 11th, 17th, 101st, and 13th Airborne Divisions until the end of the Second World War.

At the end of the war much of the transferred land was returned to the Secretary of the Interior or the State of North Carolina. Camp Mackall, however, continued to be held by the military and, with the coming of the Vietnam War, a Special Forces training facility was developed at Mackall. Today the facility is still used by Special Forces and the airfield is used for Army rotary wing, Air Force airlift, Low Altitude Parachute Extraction System, and airmobile training.

RESEARCH STRATEGY AND METHODS

Research Goals

The primary goals of this survey were to identify, record, and assess the significance of archaeological sites within the 642.63 ha Northern Training Area IV survey tract. As stated earlier, this work is being done in order to fulfill compliance with the National Historic Preservation Act (Public Law 89-665, as amended by Public Law 96-515) Guidelines for Federal Agency Responsibilities, under Section 110 of the National Historic Preservation Act, Army Regulation AR 420-40, and 36CFR800 (Protection of Historic and Cultural Properties).

Preservation efforts offer important economic, tourism, and education opportunities (see, for example, Rypkema 1990). Yet, understandably these are of little consequence to a government agency whose mission statement is national defense. Clearly, in such a case, the motivation is compliance with law. In spite of this, preservation offers intangible benefits, such as external benefits to society, which are worthy of careful consideration. U.S. Representative John Lewis from Georgia has remarked that, "it is not enough to learn from history or a movie, we must make sure that these precious pieces of our history are preserved." Knowing and understanding our past, many have argued, creates better citizens and hence a better society.[1] Citizens take greater pride in their city's, county's, and country's historical achievements. This pride naturally boosts morale and enhances civic participation. Native American and African American groups can rightly take pride in the expression of their unique ways of life, their history, and their contribution to our Nation. Exploration of our past reveals the heights of which humanity is capable. The study supplies continual inspiration and promise. The exploration of the past makes it possible to keep on seeing, thinking, and reflecting afresh — and this freshness and willingness to explore the past is essential to the democratic process. Exploration of the past may offer social commentary by providing new insights into past lives, or how society reacted to past pressures. It may even help us to better understand the failures of past.

It is also important that a country which has so strongly advocated educational improvement and reform should also understand the irreplaceable role that historic and prehistoric resources can play in teaching us about our heritage. It is essential that the next generation of citizens understand the stories hidden within our archaeological sites and in our historic churches, houses, factories, and communities. The ability to reach out and touch the past, forming a strong and clear link between yesterday and today, offers an unforgettable understanding of another way of life and helps our children better understand the fabric of life in our country. By exploring and emphasizing African American and Native American history it is possible to strengthen the understanding that our heritage is the combined history and culture of all of our citizens.

Oftentimes historic preservation, through the exploration of the past, may challenge rather than reassure, and provoke rather than sooth. Archaeological research, in many ways, offers much more than history ever can since history is largely written by the well educated, the wealthy, and the white. History tends to ignore the poor, the underclass, the illiterate, making them invisible people. History is what others want us to know, archaeology offers the opportunity to explore the reality of the past without the filter of subjectivity added by some, perhaps many, historical accounts.

[1] One of the earliest discussions of preservation for patriotic reasons is Charles B. Hosmer, Jr.'s *Presence of the Past*, a history of preservation in America up to 1926. He reveals that long before even the Civil War, America's need to create a national identity manifested itself in efforts to preserve historic sites.

Archaeology offers the potential to explore the lives of African American slaves that are largely known only through the dry history of white slave-owner account books and plantation diaries. While slave owners were concerned with how many acres a slave could hoe, or how much they had to be fed, the owner was rarely interested in how slaves lived, died, ate, or made their house a home. Likewise, our understanding of Native American groups in the historic period is dominated by traders and occasional visitors who had clear reasons for coloring their accounts. Archaeology offers the only opportunity for better understanding the reality of the past.

Part of this reality is also the understanding that history is not made up of single events, or great people, or unique ideas alone. As Tony Wrenn and Elizabeth Mulloy explained nearly two decades ago:

> Events are only punctuation marks; the process itself is history. It takes days and days of irritation and heat and insult, and grievance to provoke a revolution. A bicentennial commemorates 200 years — not just the years on either side of a hyphen (Wrenn and Mulloy 1976:15).

History is fluid and on-going. It involves both the great and the small. Archaeological studies help us better understand both the continuum and also the importance of the common person.

Many also point out that historic preservation is a "merit good" — simply because preservation is an important part of life, its perpetuation and dissemination merits government support. Like food, shelter, and education, some feel that everyone should be entitled to a minimum quantity and standard of historic preservation experience, whether that be exposure to historically significant buildings, a better understanding of past industrial technology, or the ability to explore Native Americans who lived thousands of years ago. The government allows preservation efforts to be available and emphasizes their importance by support of preservation on government facilities and land.

Inherent in the understanding of merit good is the realization that, without subsidy, the cost of historic preservation is too high relative to most consumer's incomes. In other words, were it not for government intervention it is unlikely that much of the educational aspects of preservation would widely exist or be available for the public benefit. Only the wealthy would be able to afford private preservation "experiences." It follows that there is an intrinsic wrong in making our history available to only the richest 20% of the population, who are likely to represent a very biased cross-section of our society.

However, in addition to the legally mandated goals of this study, we identified and incorporated a range of secondary goals which reflect an effort to address at least some of the issues identified as important to the discipline. These included both methodological issues, whose answers will help to better and more cost-effectively undertake survey and preservation efforts, and research issues, whose answers will help to better explore and refine our understanding of the past. The secondary goals of this survey included:

- the examination of changing prehistoric land use;
- the affects of clear-cutting and long-term exposure on archaeological sites;
- the effectiveness of 30 m interval transects at locating significant resources;
- changing lithic material preferences; and
- site function/duration based on artifact content.

No major analytical hypotheses were created prior to the field work and data analysis, although

certain expectations regarding the secondary goals will be outlined in these discussions. The research design proposed for this study is, as discussed by Goodyear et al. (1979:2), fundamentally explorative and explicative.

As stated above, the primary goals of this survey were to identify, record, and assess the significance of archaeological sites within the survey tract. The latter aspect involves the sites' eligibility for inclusion on the National Register of Historic Places, although Chicora Foundation only provides an opinion of National Register eligibility and the final determination is made by the lead compliance agency, the United States Army, in consultation with the State Historic Preservation Officer at the North Carolina Department of Cultural Resources.

The criteria for eligibility for the National Register of Historic Places is described by 36CFR60.4 and states that:

> [t]he quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and
>
> a. that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> b. that are associated with the lives of persons significant in our past; or
>
> c. that embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> d. that have yielded, or may be likely to yield, information important in prehistory or history.

It is generally accepted that "the significance of an archaeological site is based on the potential of the site to contribute to the scientific or humanistic understanding of the past" (Bense et al. 1986:60). Butler suggests that the only valid measurement of significance must be based on what he calls the "theoretical and substantive knowledge of the discipline" at any particular moment in time (Butler 1987:821). While the use of this approach over that developed by Glassow[2] (1977) has been suggested, Butler himself acknowledges, "we cannot foresee future research questions, and we may not possess the theory to interpret and understand all that is present" (Butler 1987:822). At this point in time it seems essential to recognize the importance of asking the right questions at the right sites, not limiting the number of sites at which questions are asked, or what questions are posed. Clearly, asking "right questions" at the "right sites" can be difficult and requires an understanding of the "theoretical and substantive knowledge of the discipline" (Trinkley 1990:30-31).

[2] Glassow's (1977) approach to evaluating site eligibility is through the use of five properties: site integrity, site clarity, artifactual variety, artifactual quantity, and site environmental context. These qualities stress properties of the archaeological record. *Integrity* refers to the degree of preservation or amount of in situ remains present at a site. It relates to the condition and amount of archaeological artifacts, ecofacts, and features found at a site. *Clarity* indicates how well the strata or subsurface features may be distinguished. *Variety* refers to the qualitative variability in the archaeological remains found at a particular site. *Quantity* refers to the frequency or density of the artifacts or subsurface remains and it is in many ways one of the easiest properties to evaluate (although it is certainly not the most important). The last criterion, *environmental context*, refers to unusual environmental features or zonation which might be important in distinguishing sites or site types.

National Register Bulletin 36 (Townsend et al. 1993) provides an evaluative process that contains five steps for forming a clearly defined explicit rationale for either the site's eligibility or lack of eligibility. Briefly, these steps are:

- identification of the site's data sets or categories of archaeological information such as ceramics, lithics, subsistence remains, architectural remains, or sub-surface features;

- identification of the historic context applicable to the site, providing a framework for the evaluative process;

- identification of the important research questions the site *might* be able to address, given the data sets and the context;

- evaluation of the site's archaeological integrity to ensure that the data sets were sufficiently well preserved to address the research questions; and

- identification of "important" research questions among all of those which might be asked and answered at the site.

This approach, of course, has been developed for use documenting eligibility of sites being actually nominated to the National Register of Historic Places where the evaluative process must stand alone, with relatively little reference to other documentation and where typically only one site is being considered.

In the case of a survey which identifies multiple sites the process outlined by Townsend et al. (1993) can become burdensome. Consequently, this study has elected to combine some of the steps, making the process more streamlined, without substantively altering the goal to ensure that sites capable of providing significant information are provided the protection afforded in the historic preservation process. The development of a context was not undertaken for each site, but is found outlined in the prehistoric and historic overview section of this report. The identification of "important" research goals is discussed below, outlining significant research issues such as those identified for the coastal region of North Carolina (Phelps 1983).

Otherwise, the evaluative process was essentially the same as outlined by Townsend et al. (1993). Data sets and integrity are discussed, and reference is made to the possibility of erosion and subsequent deflation that may occur as a result of logging operations within these survey areas. It has been determined in other studies (Trinkley et al. 1996a; Trinkley et al. 1996b) that on sites where erosion/deflation has occurred that the integrity of these sites and other data sets (such as subsurface features) that might have been present are often destroyed. Reference to the prehistoric context is made (when diagnostic material was found) as well as research issues that the site might be able to address.

In his synthesis of prehistoric archaeology of the Coastal Plain, Phelps (1983) listed some of the most important issues regarding the cultural history of the area. While certainly not exhaustive, they are used to help determine which sites identified in the survey tract are important to a better understanding of the local prehistory. Phelps (1983:50) states that these issues include:

> (1) knowledge of Paleo-Indian period site distribution correlated with Pleistocene environment, which would result in settlement and subsistence models to be tested against those currently proposed;
>
> (2) discovery and excavation of either single-component or stratified Paleo-Indian and Archaic period sites to provide more accurate descriptions of assemblages for each phase and to assay

> diachronic changes in the assemblages as well as changes in subsistence strategies and other cultural subsystems;
>
> (3) location and excavation of sites that have preserved the transition from the Late Archaic to the Early Woodland to evaluate the impact of new technology introduced in the latter period;
>
> (4) a study of changes in settlement and subsistence patterns during the Early and Middle Woodland periods in order to understand changes resulting from the introduction of cultigens; and
>
> (5) excavation of sites that represent the range of types for each phase of the regional sequences to provide a complete culture history as a platform from which processual studies can be launched (Phelps 1983:50).

Although these issues are rather broad, they provide a good deal of latitude for framing more specific questions. These issues are discussed in greater detail in the Prehistoric Overview section of this report, but it is appropriate to briefly outline a few of the issues raised by Phelps.

His first and second research topics involve the dearth of information available concerning the Paleoindian Period along the North Carolina coast. Associated legitimate questions might include, what constitutes a Paleoindian site? This, of course, raises the question of where the line is drawn either to incorporate Hardaway and Palmer as terminal phases of the Paleoindian or to include them with Archaic traditions. The answer, of course, cannot come solely from typological studies and arguments, but must incorporate the identification and study of both stratified and even single component sites. The study must include the integrated exploration of both the soils and palynological records. Questions are raised concerning the types of landforms and microenvironmental areas in which Paleoindian sites are most likely to occur. Can the distribution of sites help us refine our understanding of Paleoindian subsistence and their use of different habitats? Additional questions are legitimately raised concerning the differing dates suggested for early sites. It is unfortunate that sites like Hardaway were destroyed before appropriate dating could be undertaken, but there are certainly other sites which may contain suitable proveniences and materials. How do the materials from the Sandhills compare, typologically, to those from the Coastal Plain or Piedmont? Is it possible to distinguish differences which might suggest the extent of different settlement systems?

His third question poses the concern of how Late Archaic Savannah River Stemmed point users became Early Woodland Badin or Deep Creek/New River pottery makers. While obviously early, well-dated sites producing Stallings or Thom's Creek pottery would be ideal, the investigation of virtually *any* Early Woodland ceramic site in the North Carolina Sandhills or on the state's Inner Coastal Plain would be exceptional, especially if it were then published. The research goal also should be interpreted to include questioning how the size of Savannah River points seems to have so consistently declined in size. Can stratified sites showing this change be identified? Ranging off from these initial questions, there are a whole series of especially significant issues. Perhaps one of the most intriguing is how the Middle and Late Archaic evolved into the Early and Middle Woodland. What were the processes, both internal and external, which caused this change and how significant was the change on the daily lives of the Native Americans?

This feeds into Phelps' fourth question concerning cultigens. While his question is phrased to support the assumption that cultigens were present in Early Woodland, it seems that there is little evidence for such a statement anywhere in North Carolina. Therefore, one of the most important research goals might involve a rededication of efforts to seek out floral and faunal remains for intensive study. If they are present,

what was their source – introduction from outside the region or internal development of "weedy" plants? What is their context and date? What was the impact of these horticultural efforts, if they existed? Did they cause any real change in the lifeways of the Woodland peoples?

Phelps' final research goal is simple – sites, and lots of them, need to be examined in order to understand the range of diversity present. Sites in the lower Piedmont, sites in the Sandhills, sites in the Inner Coastal Plain, and sites in the Lower Coastal Plain need to be explored to understand the impact of both topography and the environment.

We realize that this lays out a tremendous range of questions. Some of them will likely be unanswerable, at least with our current level of understanding and expertise. And some may perhaps never be answered, lost in the fog of time behind the clouded glass. Yet too often the very asking of questions is ridiculed. While good for a little controversy and a quick laugh at a colleague's expense, such attitudes do nothing to promote the growth of archaeology and they do even less to help the public understand their heritage. Questions, even those which at first appear unanswerable, need to be asked. Without questions research can become little more than the blind acquisition of data.

One of the secondary goals we outline was to examine changing prehistoric land use. The CZR survey (Loftfield 1979) found that sites are commonly located on hill tops, toe slopes, upland flat areas, and saddle-like settings. The majority of sites were within 100 m of a water source on sandy soils. However, no attempt was made to determine land use through time. Braley (1990) has made some general statements regarding land use based on Loftfield's (1979) study, as well as his study of the Northern Training Area (Braley 1989) (see also Braley 1990:3-13). These changes are discussed in the **Prehistoric Overview** section of this report.

In a previous survey performed by Chicora Foundation (Trinkley et al. 1996c) in the Northern Training Area a correlation with Braley's (1990) survey was found. It was determined that the majority of sites recovered during the survey "were located either on a ridge, ridge nose, or upland terrace" (Trinkley et al. 1996c:119). Yet, only one site was situated within 100 m of an intermittent drainage. The Clement et al. (1997) study determined that upland sites outnumber lowland sites by about 3 to 1 during the Woodland Period. They also found that about 67% of the non-isolated sites were within 100 m of a permanent water source (Clement et al. 1997:196, 200).

Since large portions of the Northern Training Area IV survey tract have been clear cut, and thus exposed, it may be possible to explore the process and affect of erosion/deflation at known archaeological sites. Questions concerning what effect this will have on a sites ability to address significant research questions, and therefore their eligibility for the National Register of Historic Places, may be answered. The information recovered during the present survey allows the establishment of a base line for further studies.

Another goal was to determine the ability of 30 m interval shovel test transects to locate all of the archaeological resources on a given tract. In an effort to address this question a series of quality control transects (covering approximately 81 ha) were traversed during the survey.[3] This 15% random sample resulted in the recovery of only one additional site, 31HT684*. For future contractors performing work at Fort Bragg, this type of data may assist in defining issues concerning the effectiveness of traditional survey methods to identify and spatially define sites.

Since the study area is thought to contain a large quantity of prehistoric lithic sites, analysis was geared toward determining lithic resource preference changes through time. Both quartz river cobbles and metavolcanic materials were locally

[3] These transects were situated halfway between previously established transects. Thus Trasect 50½ was midway between Transect 50 and 51 in the initial survey. Information concerning the location of these transects is available in the Chicora field notes, curated at Fort Bragg.

available, although river cobbles could be obtained within the boundaries of Fort Bragg and metavolcanics were known to outcrop as close as 16 km away (North Carolina Department of Conservation and Development 1958).

Another goal was to determine site function/duration based on artifact content. Sassaman et al. (1990) have suggested that examining the tool to debitage ratio can provide functional information about a site. For instance, a low tool-debitage ratio will reflect either "locations of intensive lithic tool production, or locations where tools or cores were modified but not discarded" (Sassaman et al. 1990:224). A high tool-debitage ratio correspond to "relatively intensively utilized locations (e.g. field stations) away from bases and/or sources of lithic raw material" (Sassaman et al. 1990:224). Artifact density is also a method of examining site function since it reflects the "relative intensity of material discard at a site. By extension, the amount of discard is assumed to be proportional to the cumulative duration of site occupation and/or the total number of site occupants, and/or the intensity of activities from which discarded debris was generated" (Sassaman et al. 1990:223). Diversity of the assemblage can also measure the length of occupation since the discard rate of curated items (such as hafted bifaces, pots, atlatls, etc.) is so low that all classes of artifacts will only be found together at sites with long occupational histories (Sassaman et al. 1990:224). This length of occupation can also be measured by the number of components present (Sassaman et al. 1990).

All of these (tool/debitage ratio, artifact density, and artifact diversity) are tools to examine the nature of an archaeological site in terms of function and duration of occupation. While Sassaman et al. (1990) recommend looking at large subsurface data sets, examining the materials from the project areas may provide a reference point for framing future research questions.

Archival Research

These investigations incorporated a review of the site files at the North Carolina Office of State Archaeology. One previously recorded archaeological site, 31HT123**, was recorded within the survey boundaries of the Northern Training Area IV survey tract by Braley (1989) as part of an intensive survey of the Northern Training Area at Fort Bragg. According to Fort Bragg's historic preservation plan (Braley 1990) no standing structures exist on the tracts and the nearest structure or site listed on the National Register of Historic Places is Long Street Church (ca. 1845) which is located approximately 6 km southwest of the Northern Training Area IV survey tract. Another notable site is Monroe's Crossroads which was located about 17 km south of the Northern Training Area IV survey tract. Here a skirmish between Wheeler's cavalry and a detachment of General Sherman's troops under the command of General H. Judson Kilpatrick occurred at the end of the Civil War in March of 1865 (Loftfield 1979:27). At Monroe's Crossroads were two plantations: Rocky Mount and Green Springs. Loftfield (1979:28) recommended that this area receive further study for possible National Register nomination (see the **Prehistoric and Historic Overview** section of this report).

Field Survey

As is often the case in field investigations, some boundaries of the survey tracts were difficult to locate in the field or were somewhat nebulous. Even 7.5' USGS topographic maps fail to show all the detail and complexity of land forms. Added to this is the nature of a landscape actively used by the military. Unfortunately, Mr. Wayne Boyko, Fort Bragg Post Archaeologist, was unable to assist in delimiting the project's boundaries due to transportation problems.

As specified by the North Carolina Office of State Archaeology and the project scope, an archaeological site is defined as six or more artifacts in a 20 m area or any two consecutive positive shovel tests. An isolated occurrence, consists of five or fewer artifacts. Both archaeological sites and occurrences were assigned state site numbers.

According to the scope of work, subsurface testing, for the purpose of boundary definitions, was to consist of testing along cardinal directions

at 10 m intervals on sites less than 50 m across and at 20 m intervals on larger sites. With the concurrence of the National Park Service representative, David Anderson and Fort Bragg Post Archaeologist Wayne Boyko, testing at sites containing well defined collection units was done at 15 m intervals. This was done in an effort to create a uniform grid over the site which combines the data between the survey transect and site delineation units.

Typically survey tracts are divided into high, medium, and low archaeological probability zones. The scope of work specified that low probability surveys include transects and shovel tests spaced at 50 m intervals across the tract. High probability surveys included transects and shovel tests spaced at 30 m intervals across the tract. All areas were to be shovel tested except areas of standing water or with 15% or greater slope. Considering the sparsity of research done in the Northern Training Area IV survey tract, the work order issued by the National Park Service specified that the entire project area be considered a high probability area.

Shovel tests, which were typically 30 cm by 30 cm or greater, were to be excavated to subsoil or if subsoil could not be identified to the maximum depth achievable with a shovel (about 75 cm). Minimally, shovel tests were excavated to about 30 cm below surface. As will be discussed, in most cases this represented either the extent of remaining A horizon soil or actual penetration into the C horizon subsoils. The fill was to be screened through 0.62 cm mesh hardware cloth and soil stratigraphy was to be recorded on positive shovel tests.

Survey transects were plotted and numbered on project field maps (Figure 21) and transect logs were kept indicating whether a shovel test was excavated or not. A total of 405 transects were traversed and a total of 9,316 shovel test stations (shovel tests/surface survey) were used. Of the 9,316 shovel test stations, 3,554 (or 38%) consisted of shovel tests and the remaining 5,762 were either surface surveyed, contained standing water, or fell on a slope. As well, a series of quality control shovel test were excavated. A total of 16 transects were traversed and a total of 655 shovel test stations were used. Of the 655 shovel test stations 408 (or 62%) consisted of shovel tests and the remaining 247 were either surface surveyed, contained standing water, or fell on a slope.

As the site maps in the following report section are examined, it will become obvious that on occasion a positive surface collection station will appear to be located *outside* of the site boundaries. While this may at first appear to be an error in the location of site boundaries, it is not. When required, each surface collection station was based on the transect grid. These were used to form a 30 m grid collection square. In order to refine boundaries as much as possible, the materials from these areas were not randomly collected. Instead, the grid square was walked and the artifacts were flagged. This allowed site boundaries to be drawn on the basis of where in the collection area artifacts were actually found. This means that while the actual center point of the collection station may be shown "outside" the site boundaries, if you draw a 30 meter square around the center point, the portion within the drawn site boundaries actually produced artifacts. The rest of the collection area did not contain artifacts and was therefore excluded from the site. The goal here, of course, was to as much as possible replicate the precision offered by multiple shovel tests.

A rough estimate of site size was typically based on shovel test results and/or the distribution of surface artifacts collected during the routine running of 30 m transects. According to the Scope of Work all sites were to be tested in a cruciform pattern at designated intervals, based on site size, until two consecutive negative tests were encountered around each positive test. The last shovel test in the sequence containing archaeological materials was to constitute a boundary.

On the Northern Training Area IV survey tract very few areas offered enough visibility to collect artifacts from the surface. At non-isolated occurrences, there is only one case, 31HT123**, where although surface remains were apparent, no

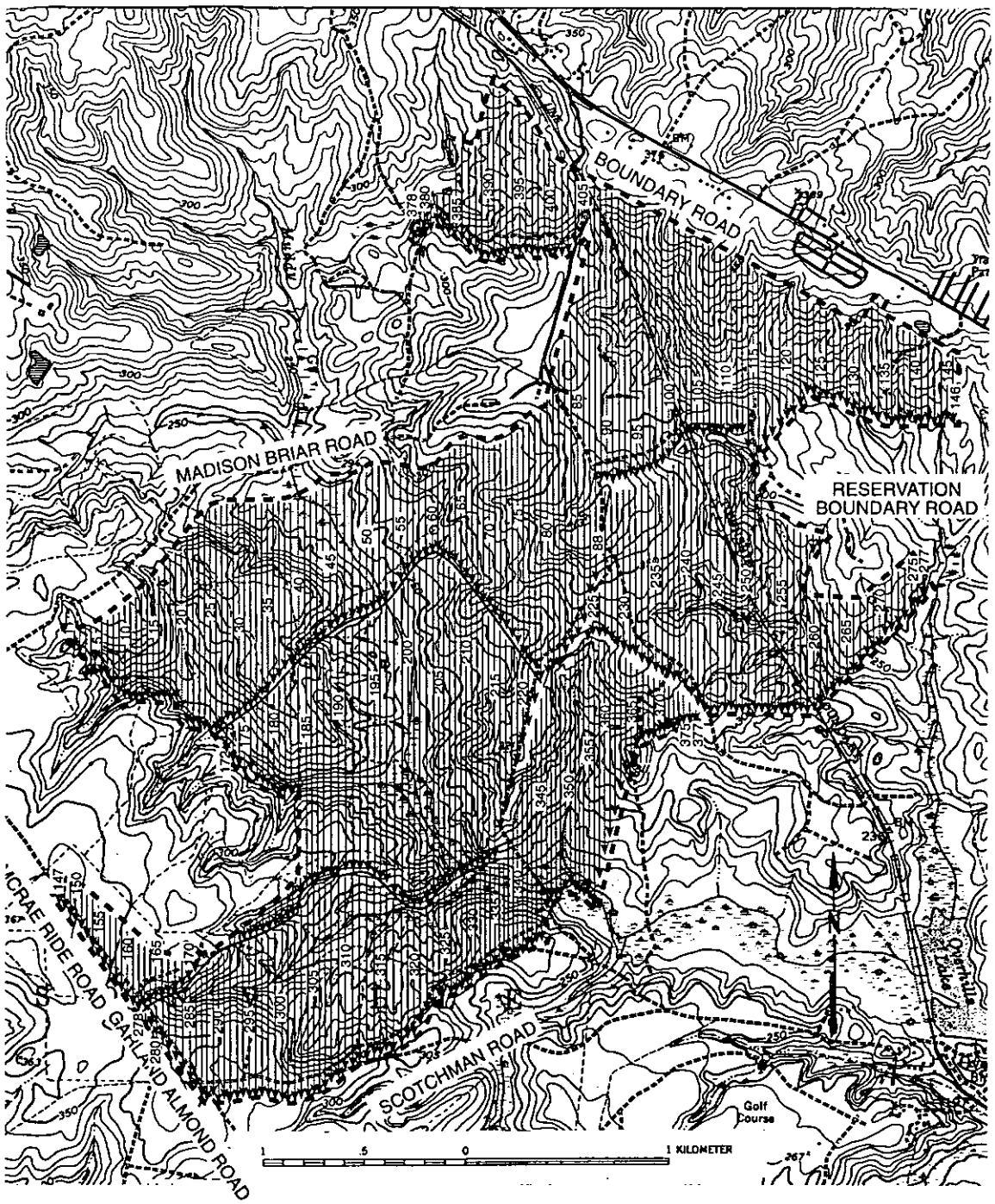

Figure 21. Survey transects at Northern Training Area IV survey tract.

subsurface remains were encountered during shovel testing. Initially, in these cases, all boundaries were defined by the extent of surface remains. One 50 by 50 cm test was to be excavated at each *site* to subsoil or a minimum of 100 cm (assuming subsoilwas not reached). Profiles were to be drawn to scale and soil was to be described using a Munsell Soil Color designation. Photographs were to be taken using black and white and color transparency film.

At each *site*, a sketch map was to be drawn to scale showing the locations of shovel tests, test units, natural and man-made features, and datums. In addition, GPS positions were to be taken at all sites, and at each potentially eligible or eligible *site* a metal datum was to be established.

Normally, the GPS positions would be taken with a Trimble GeoExplorer™ rover with *at least* one position recorded. Where possible, additional positions were taken since averaging provides some improvement on accuracy. These positions record the latitude, longitude, and altitude of a point. Prior to correction these positions resemble a scatter of points; affected by what is called selective availability (S/A). This is the deliberate introduction of errors into the GPS measurements by the Department of Defense.

GPS readings taken with S/A active can be corrected by comparing it to data collected simultaneously at a known location or base station. Called differential correction (or DGPS), this was undertaken with the Fort Bragg data as postprocessing. With correction, this scatter of points is consolidated to form a single position where the theoretical accuracy may be ±5 m.

The critical parameters used by the Chicora rover attempted to maximize both data quality and quantity, using the Trimble recommended default settings (for example, the PDOP mask, which is an indication of the accuracy of the GPS positions which are calculated, is set at 6, with PDOPs below 4 being excellent and above 8 being poor). In an effort to eliminate past problems of incompatibility and consolidation during post processing (see Trinkley et al. 1996c) GPS positions were taken with a Trimble Pathfinder™ rover provided by Fort Bragg Acting LCTA Coordinator Jennifer Hall. Although at least 200 positions were recorded at each site location during the current survey, problems with a lack of data were encountered during post processing. This problem was discussed with Ms.

Table 2.
UTM Coordinates for Sites in the Holland Drop Zone Survey Tract Using GPS with Selective Availability

	Position	GPS		Map Interpolation	
Site#	Recorded	N	E	N	E
31HT123	0	NR	NR	3901400	676980
31HT684	200	3901154	675046	3901200	674900
31HT685	200	3901708	676826	3901680	676770
31HT686	200	3903111	677270	3903560	677380
31HT687*	200	3902893	677334	3903340	677400
31HT688*	200	3903064	677317	3903140	677410
31HT689*	200	3902945	677341	3903000	677410
31HT690*	200	3902251	677763	3902360	677750
31HT691*	200	3899498	675308	3899640	675240
31HT692*	200	3900570	676339	3900700	676260
31HT693*	200	3901282	677311	3901420	677340
31HT694*	200	3901237	677542	3901360	677540
31HT695*	200	3901738	677842	3901875	677850
31HT696*	200	3901591	677867	3901760	677880
31HT697*	200	3901809	677932	3901875	677960
31HT698*	200	3901936	677915	3901980	677920
31HT699*	200	3901637	677973	3901700	677950
31HT700*	200	3901549	677983	3901575	677950
31HT701*	200	3901493	677998	3901525	677975
31HT702*	200	3901374	678018	3901400	677950
31HT703*	200	3902024	677935	3902200	677980
31HT704*	200	3901482	678020	3901500	677980
31HT705*	200	NR	NR	3901300	678040
31HT706*	200	3901472	678054	3901550	678025
31HT707*	200	3901980	678030	3902090	678020
31HT708*	200	3901451	678306	3901480	678250
31HT709*	200	3901138	678469	3901240	678350
31HT710*	200	3899136	675398	3999320	675300
31HT711*	200	3899981	675980	3900140	676120
31HT712*	200	3900012	676005	3900200	676120
31HT713*	200	3899676	676940	3899860	676960
31HT714*	200	3899757	677091	3899900	677020
31HT715*	200	NR	NR	3901300	677490
31HT716*	200	NR	NR	3901400	677480
31HT717*	200	3901708	676619	3901960	677620

NR = no reading obtained by GPS

Hall. Although unable to isolate problems concerning a lack of data, she did note that "on occasion a GPS unit will not record any positive hits" (Jennifer Hall, personal communication 1997). Fortunately, only four sites revealed no readings (see Table 2).

The only other changes we can immediately identify which might improve the quality of the DGPS data would be to schedule data collection times and satellites being used based on their almanac files in order to maximize precision. This, however, is a time consuming technique and also requires that the field survey be scheduled around GPS acquisition, which is not cost effective. Consequently, we recommend that reliance continue to be placed on map interpolation as the primary site location technique.

With this in mind, UTMs were also hand plotted. These positions are provided in Table 2. Comparing the DGPS and interpolated map coordinates reveal significant differences. While there are certainly problems recording positions in the woods, as any archaeologist will affirm, the interpolated positions have high levels of confidence since they are based on topographic features, distances and bearings to landmarks, and placement within well identified transects. In all cases the hand plotted UTMs are considerably more accurate than the DGPS coordinates.

Datums at potentially eligible sites consisted of a length of iron rebar with approximately 5 cm exposed above ground. An aluminum cap marked with the temporary site number was placed on top of the rebar. Permanent site numbers could not be used on the site datums since they had not yet been assigned by the North Carolina Office of State Archaeology.

No deviations from the original methodology described in the Scope of Work (other than those discussed above) occurred during the field work. No other unusual or expected problems occurred during the study which affects the quality of the data.

Laboratory Methods

The washing and cleaning of artifacts and cataloging of the specimens was conducted during rain days in the field and completed at Chicora laboratories in Columbia in late December 1997. The materials will be curated at Fort Bragg and have been cataloged using that institution's accessioning practices. All processing and labeling of artifacts follow procedures and standards defined by the North Carolina Office of State Archaeology (see Archaeological Curation Standards and Guidelines, 1995 revised). Table 3 provides a list of permanent site numbers and their corresponding accession numbers as assigned by the North Carolina Office of State Archaeology. No specimens were identified which required conservation or stabilization. Specimens were packed in plastic bags and boxed. Field notes were prepared on pH neutral, alkaline buffered paper and photographic materials were processed to archival standards. All field notes, with archival copies, will also be curated with this facility.

Analysis methods focused on occupation spans, likely functions of the various sites, and changes in raw material preferences. For those sites which were prehistoric, diagnostic lithics and/or ceramics provided temporal information. The diagnostic lithic remains were compared to published typological descriptions for the various projectile points such as Coe (1952, 1964), Oliver (1981), and South (1959).

Two primary materials were identified in the lithic collections. One was quartz, which was usually a translucent white, but occasionally reddish, grayish, yellowish-brown, or clear. This material might have been obtained from either veins at Piedmont sources, or as cobbles in Sandhill river gravels. The other common material was classified simply as metavolcanic, meaning partially metamorphosed volcanic rocks. This might include chert, flow banded rhyolite, porphyritic rhyolite, plain rhyolite, felsic tuff, welded vitric tuff or breccia tuff.

Debitage categories included primary (defined as flakes with 90% or more cortex), secondary (defined as having 1% to 90% cortex),

interior (defined as having no cortex). These categories, widely used, are briefly explained by Yohe (1996:54-56). More refined categories, where they are used, follow the definitions offered by Blanton et al. (1986), Oliver et al. (1986), and Yohe (1996).

Table 3.
Correlation of Accession Numbers with Site Numbers

Site No.	Acc. No.	Site No.	Acc. No.	Site No.	Acc. No.
31HT123	97969	31HT695	97939	31HT707	97951
31HT684	97927	31HT696	97940	31HT708	97952
31HT685	97929	31HT697	97941	31HT709	97953
31HT686	97930	31HT698	97942	31HT710	97954
31HT687	97931	31HT699	97943	31HT711	97955
31HT688	97932	31HT700	97944	31HT712	97956
31HT689	97933	31HT701	97945	31HT713	97957
31HT690	97934	31HT702	97946	31HT714	97958
31HT691	97935	31HT703	97947	31HT715	97959
31HT692	97936	31HT704	97948	31HT716	97960
31HT693	97937	31HT705	97949	31HT717	97928
31HT694	97938	31HT706	97950		

At the survey level tools are defined very simply, being placed in broad morphological categories. Our laboratory methods, for example, define a biface as an artifact with flakes removed on both sides (not distinguishing between preforms, early stage reductions, and so forth); a core is a piece of raw material from which flakes have been removed; an end scraper is a blade tool with at least one convex end which exhibits a steep angle; a used flake is a chip of stone that was used as a tool, exhibiting edge damage or wear; and a side scraper is a flake tool in which one of the long edges was retouched to serve as the scraping edge. These definitions generally follow those provided by Yohe (1996).

Pottery examples were compared to typological descriptions provided by Coe (1964), Loftfield (1976), and South (1959) for the south coastal region and the North Carolina Piedmont. They were also compared to the type descriptions offered by Phelps (1983) for the north coastal region.

Analysis of the historic collections follow professionally accepted standards with a level of suitability to the quantity and quality of the remains. In general, the temporal, cultural, and typological classifications of historic remains follow such authors as Cushion (1976), Godden (1964, 1985), Miller (1980, 1991), Noël Hume (1978), Norman-Wilcox (1965), Peirce (1988), Price (1970), South (1977), and Walton (1976). Glass artifacts are identified using sources such as Jones (1986), Jones and Sullivan (1985), McKearin and McKearin (1972), McNally (1982), and Vose (1975). Sutton and Arkush (1996) provide an excellent overview of a broad range of other historic material, although primary sources will typically be provided in the text if the remains require a more detailed analysis.

RESULTS OF SURVEY

Introduction

The cultural resources identified during the intensive survey of the 942.63 ha designated as the Northern Training Area IV, consist of 21 archaeological sites and 14 isolated occurrences. Only one site, (31HT123**) was previously identified and this resource is recommended as not eligible for inclusion on the National Register of Historic Places. Two of the sites (31HT690* and 31HT691*) are recommended as potentially eligible for inclusion on the National Register of Historic Places and worthy of protection until such time as they can be further assessed.

A total of 35 prehistoric and historic sites and occurrences were recovered in the Northern Training Area IV survey tract. The seven historic sites and occurrences date from the late-nineteenth to early twentieth century. The 30 prehistoric sites and occurrences range from the Early Archaic to the Woodland Period. Two sites contained both prehistoric and historic cultural resources (Table 4). The prehistoric sites, by convention of the North Carolina Office of State Archaeology are designated by an asterisk (*) following the number. The historic sites are designated by two asterisks (**) following the site number.

Table 4.
Archaeological Sites Identified at the Northern Training Area IV

Site Number	Components	Artifacts	Size m²	Quadrangle	Eligibility
31HT123**	Historic	1	14,000	Overhills	NE
31HT684*	Prehistoric	2	1	Overhills	NE
31HT685*	Early Archaic	12	400	Overhills	NE
31HT686*	Late Archaic–Woodland	58	1,925	Olivia	NE
31HT687*/**	Prehistoric/Historic	8	600	Olivia	NE
31HT688*	Prehistoric	4	10	Olivia	NE
31HT689*	Prehistoric	2	1	Olivia	NE
31HT690*	Archaic–Woodland	957	72,900	Olivia	PE
31HT691**	Historic	115	1,250	Overhills	PE
31HT692*	Woodland	17	300	Overhills	NE
31HT693*	Prehistoric	1	1	Overhills	NE
31HT694*	Prehistoric	4	10	Overhills	NE
31HT695*	Prehistoric	13	700	Overhills	NE
31HT696*	Early Archaic	17	1,100	Overhills	NE
31HT697**	Historic	26	1,400	Overhills	NE
31HT698**	Historic	1	300	Overhills	NE
31HT699*	Prehistoric	53	1,375	Overhills	NE
31HT700*	Prehistoric	2	10	Overhills	NE
31HT701*	Prehistoric	1	1	Overhills	NE
31HT702*	Prehistoric	5	1	Overhills	NE
31HT703*	Prehistoric	23	400	Overhills	NE
31HT704*	Prehistoric	1	1	Overhills	NE
31HT705*	Prehistoric	3	1	Overhills	NE
31HT706*	Prehistoric	2	1	Overhills	NE
31HT707*	Woodland	31	2,700	Overhills	NE
31HT708*	Early Archaic–Woodland	57	800	Overhills	NE
31HT709*	Woodland	3	1	Overhills	NE
31HT710*/**	Middle Archaic–Historic	44	11,750	Overhills	NE
31HT711*	Prehistoric	4	1	Overhills	NE
31HT712*	Prehistoric	4	10	Overhills	NE
31HT713*	Prehistoric	2	1	Overhills	NE
31HT714*	Woodland	7	400	Overhills	NE
31HT715*	Woodland	2	1	Overhills	NE
31HT716*	Prehistoric	1	1	Overhills	NE
31HT717**	Historic	53	2,400	Overhills	NE

PE = eligible for inclusion on the National Register; NE = not eligible for inclusion on the National Register.

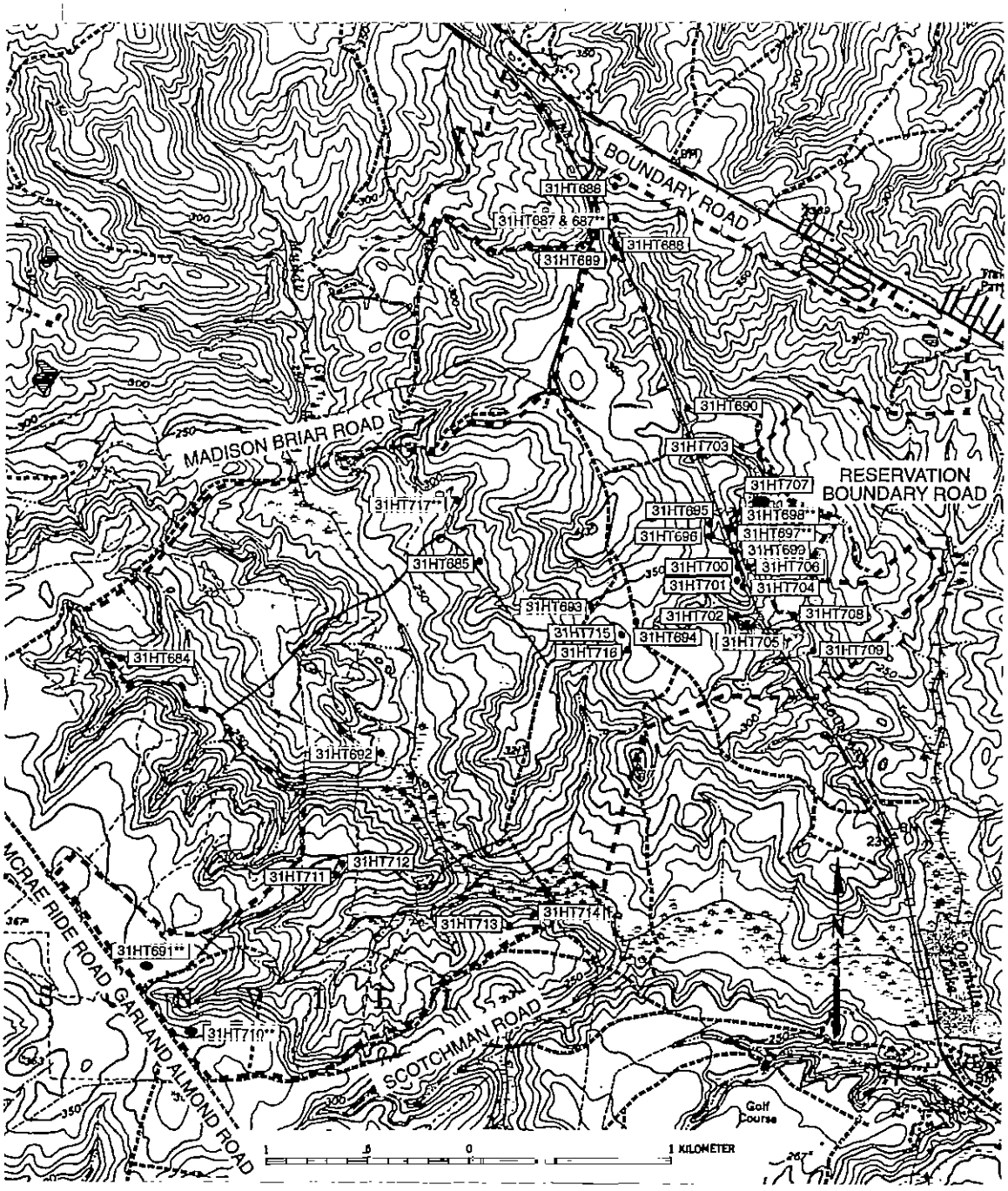

Figure 22. Archaeological sites (including occurrences) found in the Northern Training Area IV survey tract.

Previously Recorded Site

31HT123**

Although a number of sites have been identified during previous surveys in the general region (Clement et al. 1997, Trinkley et al. 1996b, Trinkley et al. 1996c, Braley 1989), only one site, 31HT123**, was previously located within the project area. Site 31HT123** was reported by Southern Archaeological Services archaeologist Charles Braley as a historic site located 800 m west of Scotchman Road about 1,288 m south of the intersection of Madison Briar and Scotchman Road. The UTM coordinates were reported as N3901160 E676720. The soils in this area are classified as Blaney loamy sands. The site elevation was recorded as 85 m AMSL (Figure 23).

Braley recorded multiple structures including two basement features, possibly a spring house and domestic structure, two exterior fireplace bases, three rock piles, a low stone wall, and a well. A total of 18 prehistoric and historic artifacts were recovered from five shovel tests. Prehistoric artifacts included seven quartz flakes, one metavolcanic flakes tool, one quartz chunk, and one quartz fire-cracked rock. Historic artifacts included one burned stoneware ceramic, one ironstone ceramic, three fragments of lamp glass, and three cut nails (Braley 1989:A-14).

Braley's observations of the features at site 31HT123** were limited:

> the site contains remnants of multiple structures including outbuildings and a dwelling. . . The structural remnants are characterized by cellar-like depressions, rock terraces, chimney bases (ferruginous sandstone and machine made brick), and an abandoned well (Braley 1989:54).

Braley also recommended 31HT123** as having good research potential as it was "a well preserved example of a mid-late nineteenth century house site." Braley recommended that "additional work [is] needed to refine [the] dates of occupation," as well as archival research (31HT123** site form).

Chicora Foundation relocated this site during the present survey. Site 31HT123** is a series of historic structural components located 270 m north of Fort Bragg Fire Break 2 and about 800 m northwest of the intersection of Scotchman Road and Fort Bragg Fire Break 2. The central UTM coordinates are N3901400 E676980. These new coordinates reflect a difference of 240 m north and 260 m east from those recorded by Braley (1989). This difference in UTM placement caused a great deal of confusion during the survey, since we initially sought the site in the originally recorded location. Consultation between Chicora Foundation and Fort Bragg personnel determined that the previous UTM coordinates were inaccurate and the site was eventually found in the revised location. The site elevation has been revised to 101 m AMSL.

The site is situated on a terraced slope (exceeding 15%) to the southeast and bisected by a deep ravine running east-west. This ravine slopes up to the north and south. A spring head lies 55 m to the northwest at the base of a moderately high bluff. Vegetation at the site consists of mature pine, pecan, and oak with an thick stand of scrub oak covering a majority of the site and its features. Surface and lateral visibility is very poor (Figures 24 and 25). Initially located at Shovel Test 25 on Transect 72 (N200E200) an additional 29 shovel tests were excavated at 10 m intervals on a north-south by east-west cruciform pattern. No artifacts were recovered during subsurface testing.

A general surface collection was conducted during subsurface testing. Although the site yielded only one artifact — an undecorated whiteware ceramic — several rock features were observed during the course of testing. Feature 1, located in the southwest portion of the site, is a rectangular depression measuring 8.0 m north-south by 3.8 m east-west and 0.5 m deep. Not noted by Braley (1989), a fireplace base is located at the northern end of the depression.

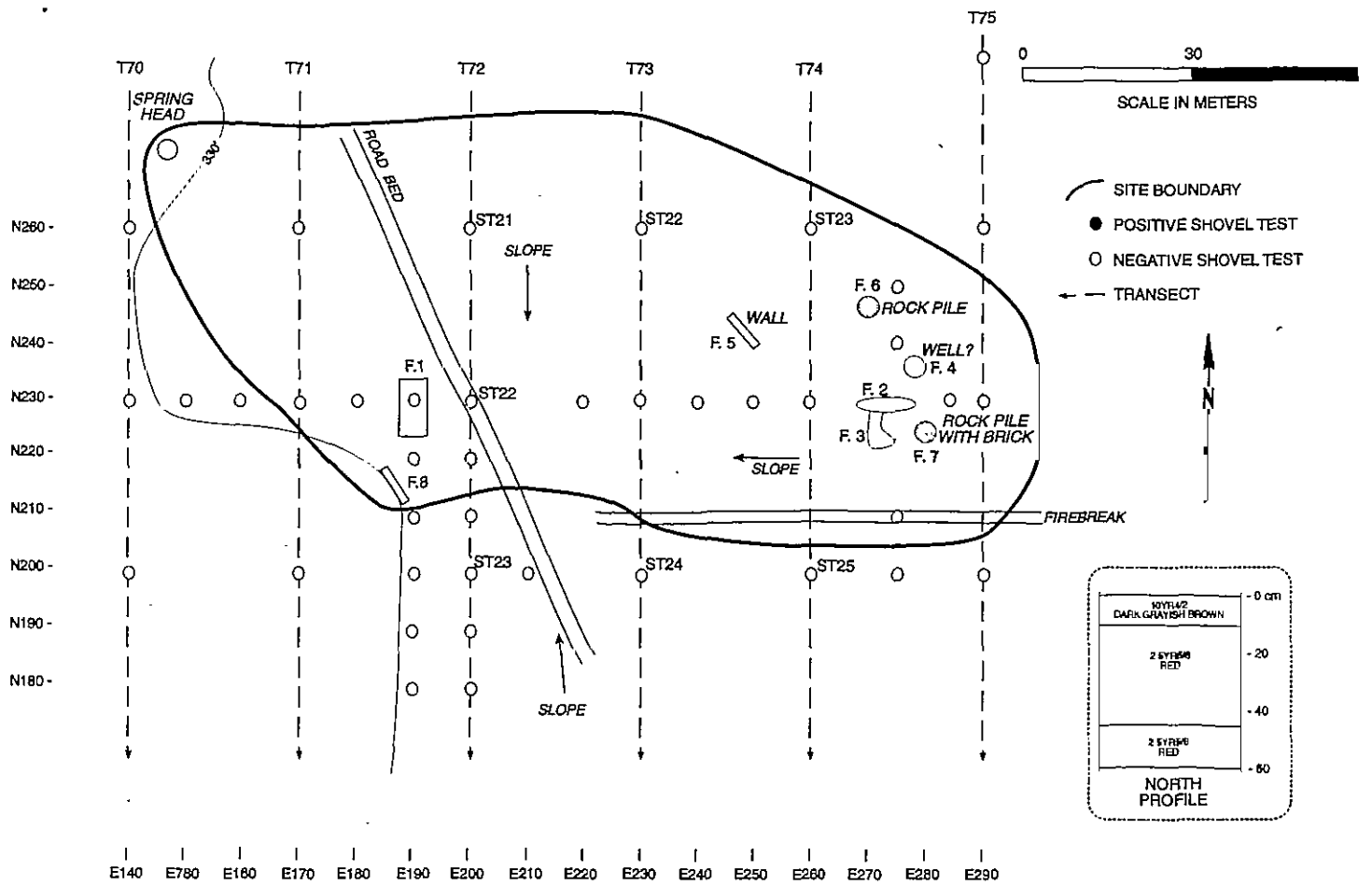

Figure 23. Map of site 31HT123** and shovel test profile.

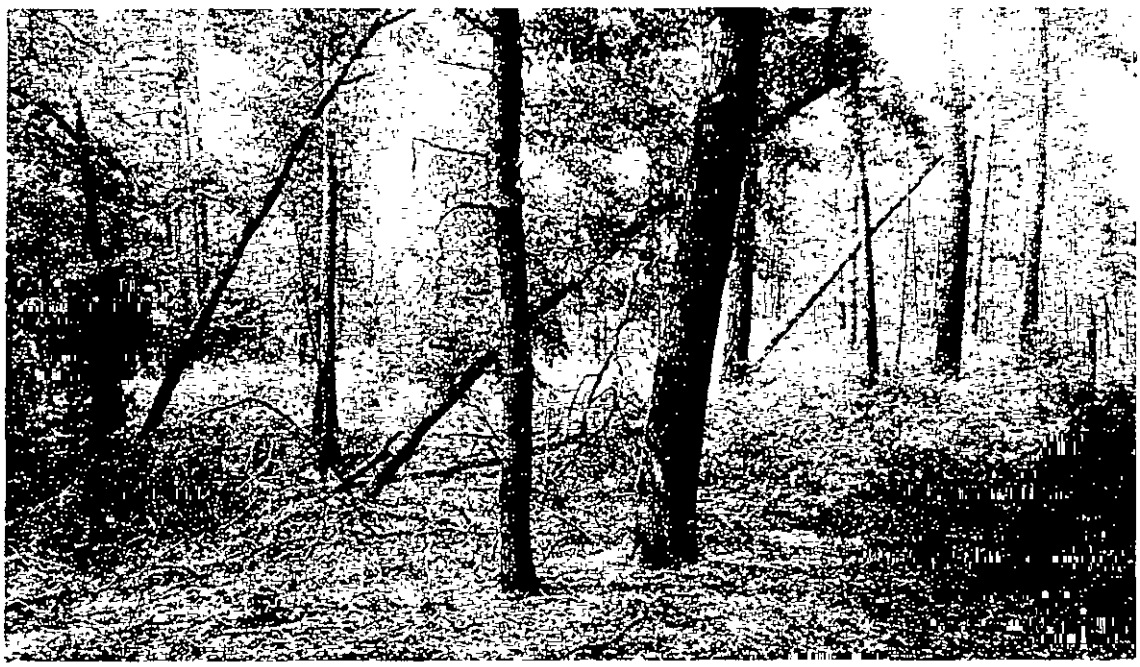

Figure 24. Site 31HT123** Feature 1, view to the south.

Figure 25. Site 31HT123**, Feature 2, view to the east.

Feature 2, located in the eastern portion of the site, is an oval shaped depression measuring 5.0 m east-west by 2.0 m north-south and 1.2 m deep. Two fireplace bases were observed at each end of the long axis of this depression. These were described by Braley (1989:53, Figure 16) as rock piles.

Feature 3, located just south of Feature 2, is an elongated pile of natural stone measuring about 16.5 m north-south by 6.0 m east-west and 1.0 m high. A small number of bricks were observed dispersed among the rocks found in this feature. Braley drew this feature as a series of small rocks running in a southeast arc from the western end of Feature 2 (see Braley 1989:53, Figure 16). Lacking any integrity in stone placement and much too large to be a chimney fall, this feature looks to be a bulldozer push pile of stones possibly used in the initial construction of Feature 2.

Feature 4, located about 8.0 m northeast of Feature 2, is a circular depression measuring 2.1 m in diameter and 1.3 m deep. Chicora Foundation concurs with Braley that this feature suggests the presence of a well.

Feature 5, located about 50 m to the northwest of Feature 2, appears to be either a low stone wall or elongated pile of natural stone 3.0 m northwest by southeast and 2.3 m northeast by southwest. No bricks were observed among the rocks in this location. Similar to other piles of stone observed at the site, these too lack integrity in stone placement.

Feature 6, about 50.0 m north of Feature 2, and Feature 7, about 15.0 m southeast of Feature 2, are piles of natural stone. No bricks were observed in either of these piles. Although described as chimney bases by Braley (see Braley 1989:53, Figure 16) they lack the integrity in stone placement to be considered chimney bases and are considered much too small to be chimney falls. Similar to Feature 3, these features look to be bulldozer push piles of stones possibly used in the initial construction of Feature 2. A third rock pile observed by Braley (1989) was not relocated.

Feature 8, located in the southwest portion of the site, is a ground level stone wall of articulated natural stone. This feature was not recorded by Braley (1989).

In general, site observations suggest that the site has been adversely impacted since Braley's initial observations in 1989. The damage the site has incurred since that time is probably from the removal of trees either selectively cut at the site, as well as in those areas adjacent to it which were clear cut. Based on the dispersion of surface features, the site dimensions are estimated to be 100 m north-south by 140 m east-west, encompassing approximately 14,000 m^2.

A soil profile, taken from N200E200 revealed a gray (10YR 6/1) sand to a depth of 10 cm overlaying 20 cm of an orange (10YR 5/6) sand. These soils are classified as Blaney loamy sands.

The structural remains identified during testing suggests the presence of a domestic site originating sometime in the late nineteenth or early twentieth centuries. Braley's collection (Braley 1989:A-14) is similar to that found at other dispersed farmsteads at Fort Bragg (Trinkley et al. 1996c:105-107). Clearly such sites as 31HT123** are important since they have the potential to yield information concerning the presence of dispersed historic home sites in the Fort Bragg area.

Unfortunately, similar to other sites in the project area, 31HT123** has been heavily impacted by either military activity, logging and/or farming operations and neglect. Blaney loamy sands normally exhibit an A horizon of grayish brown (10YR 5/2) sands to a depth of 23 cm. This would indicate that, through deflation, about 13 cm of topsoil has been removed. Although above ground features were encountered, the lack of viable soils or artifact collection would suggest that very few material remains still exist.

As previously mentioned, the exploration of historic settlement in the Fort Bragg area should be a priority. However, this site does not appear to possess either the data sets, or integrity, necessary to address these issues (Townsend et al.

1993:32). The information the site can provide, primarily on Sandhills settlement patterns and association with environmental zone, has been recovered through the current survey. Consequently, site 31HK123** is recommended as not eligible for inclusion on the National Register.

Newly Recorded Sites

31HT685*

Site 31HT685* is a prehistoric subsurface lithic scatter located 840 m south of Madison Briar Road and 690 m west of Scotchman Road. The central UTM coordinates are N3901680 E676770. The site elevation is 88 m AMSL (Figure 26).

The site is situated on a ridge toe which exhibits strong slopes primarily to the west. A drainage of Muddy Creek lies 480 m to the west. Vegetation at the site consists of sparse planted pine and oak with a dense scrub oak understory resulting in limited surface visibility. The site yielded a total of 12 artifacts. Site 31HT685* was initially discovered during routine shovel testing (ST28 on T68) from which three quartz flakes were recovered. An additional 21 shovel tests were excavated at 10 m intervals in cardinal directions from the initial positive shovel test. Three of these, or 14%, yielded a total of nine artifacts. These included two metavolcanic flakes from N190E180, four metavolcanic flakes and one chert Big Sandy projectile point, measuring 38.09 mm in length, 19.17 mm in width, and 6.96 mm in thickness, from N200E180, and one quartz flake from N200E190.

A general surface collection conducted during subsurface testing yielded no artifacts. The site dimensions range from 20 m north-south by 20 m east-west area, or 400 m².

A 50 by 50 cm test unit was centrally located and excavated to a depth of 50 cm. One chert flake was recovered from the 20 to 30 cm level. The soil profile of the test unit revealed a grayish brown (10YR 5/2) sand to 6 cm overlaying 17 cm of very pale brown (10YR 8/4) sand. This is followed by 27 cm of brownish yellow (10YR 6/8) sand. These soils are classified as Blaney loamy sands.

The artifacts recovered during testing indicate the presence of a prehistoric activity area. Although 3 of the 21 shovel tests (14%) produced artifacts, the data sets are limited to debitage and a single projectile point. The presence of a Big Sandy projectile point date the site to the Early Archaic Period. No evidence was encountered of features. All of the specimens were recovered from 20 to 40 cm in depth.

Much like the historic sites found in the project area, site 31HT685* appears to suffer from soil disturbance, probably due to military activity and/or farming and logging activities. These soils are classified as Blaney loamy sands which normally exhibit an A horizon of grayish brown (10YR 5/2) sands to a depth of 18 cm below surface. The soil profile for the site contains two A horizons which extend to a depth of 27 cm. This indicates at least two periods of deflation and/or deposition at the site.

It seems unlikely that this site exhibits either the data sets or the integrity to provide meaningful information regarding significant research topics (Townsend et al. 1993:32). The information the site can provide, primarily on Sandhills settlement and association with environmental zones, has been recovered through the current survey. Consequently, we recommend 31HT685* as not eligible for inclusion on the National Register of Historic Places. No further management activities are necessary.

31HT686*

Site 31HT686* is a prehistoric pottery and lithic surface scatter located 120 m east of the intersection of Madison Briar Road and the abandoned railroad bed of the Seaboard Coast Line Railroad and 280 m south of North Carolina State Highway 87. The central UTM coordinates are N3903560 E677380. The site elevation is 114 m AMSL (Figure 27).

The site is situated on a ridge top which gently slopes 600 m to the southeast towards a

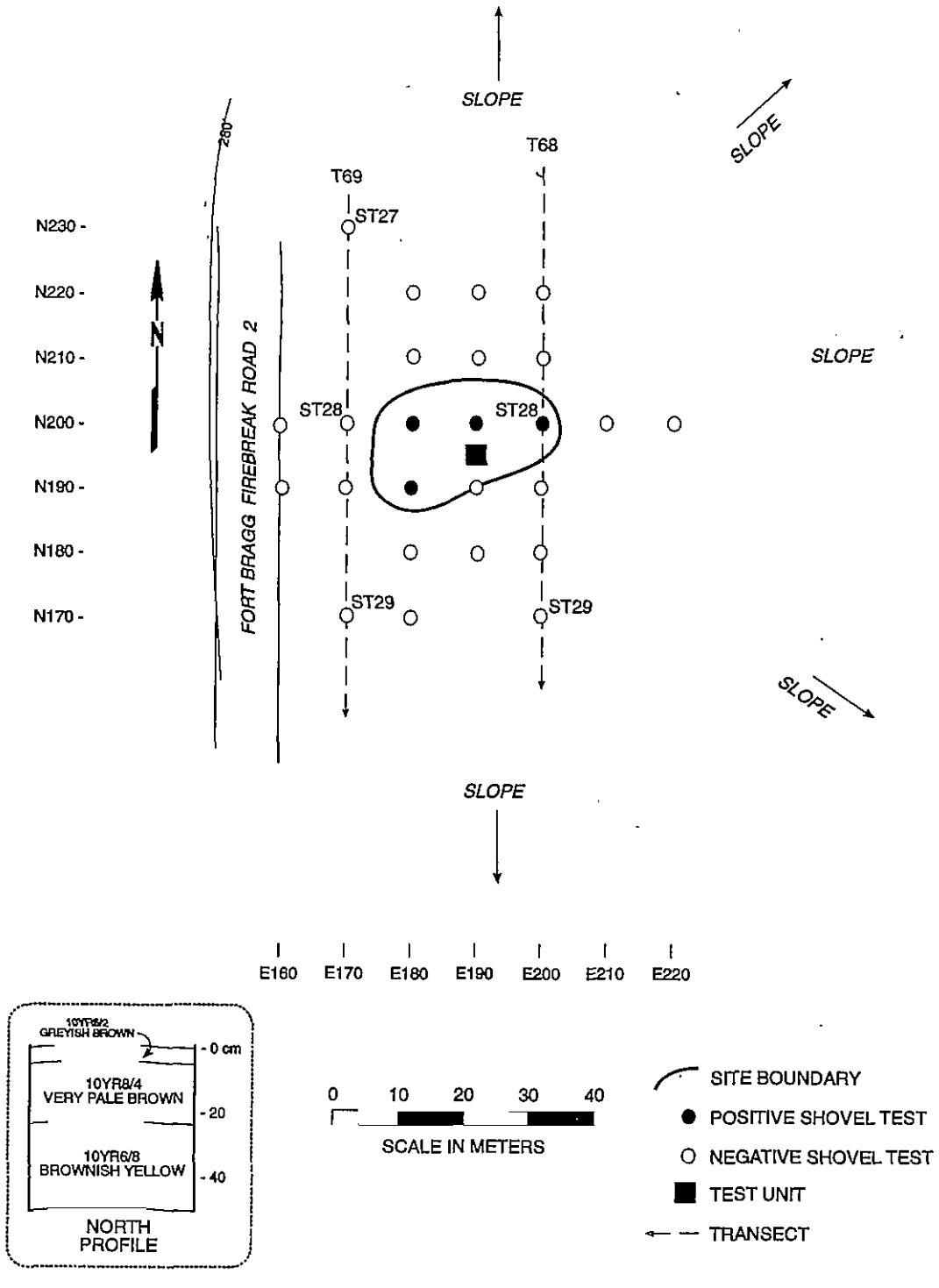

Figure 26. Map of Site 31HT685* and test unit profile.

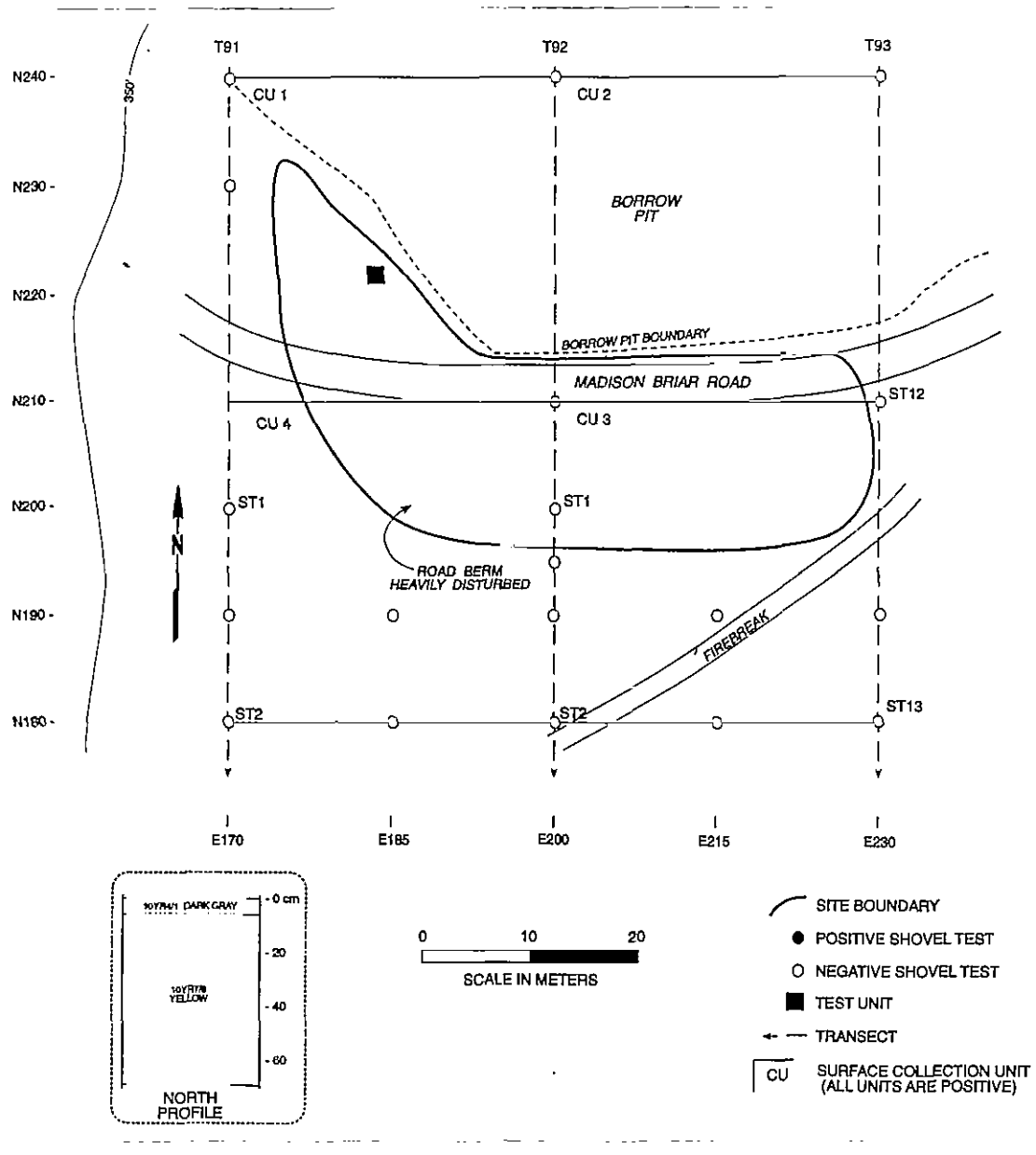

Figure 27. Map of Site 31HT686* and test unit profile.

drainage of Muddy Creek. Vegetation at the site consists of sparse planted pine and oak with a dense hardwood understory to the south and a borrow pit to the north which is void of vegetation resulting in limited surface visibility to the south and 100% visibility to the north. The site yielded a total of 58 artifacts. Site 31HT686* was initially discovered during routine shovel testing from surface finds at ST1 on T92. Three quartz flakes were recovered from this location. An additional 13 shovel tests were excavated at 15 m intervals in cardinal directions from the initial positive surface find. No additional artifacts were recovered through close interval testing.

A controlled surface collection was made using a numerically designated 30 m grid covering 3,600 m². The surface collection yielded a total of 44 artifacts. Collection Unit 1 contained three metavolcanic flakes, one metavolcanic biface, one chert preform, two quartz bifaces, and one sherd (5.46 g). Collection Unit 2 contained five metavolcanic flakes, 13 quartz flakes (including the three which were found at ST1 on T92), and one sherd (5.04 g). Collection Unit 3 contained one chert Small Savannah River Stemmed projectile point, measuring 51.48 mm in length, 23.41 mm in width, and 7.32 mm in thickness (Oliver 1981:151-154), 10 quartz flakes, and two quartz raw materials (40.21 g). Collection Unit 4 contained three metavolcanic flakes and one orthoquartzite flake. The site dimensions are 35 m north-south by 55 m east-west, for a total of about 1,925 m².

A 50 cm test unit was centrally located and excavated to a depth of 70 cm. A total of 14 artifacts were recovered from this unit. One metavolcanic flake and one quartz biface were recovered from the 10 to 20 cm level. Three quartz flakes and one quartz biface were recovered from the 20 to 30 cm level. Seven quartz flakes were recovered from the 30 to 40 cm level and one quartz flake was recovered from the 40 to 50 cm level. The soil profile of the test unit revealed a dark gray (10YR 4/1) sand to 7 cm overlaying 63 cm of very pale brown (10YR 7/6) sand. These soils are classified as Blaney loamy sands.

The artifacts recovered during testing suggests that the site was probably the locus of short term seasonal occupation which resulted in the overlap of activity areas. The presence of a Small Savannah River projectile point, as well as small sherds, dates the site from the Late Archaic through the Woodland Period. Although subsurface materials were recovered from the test unit, no additional subsurface materials were recovered from close interval testing and the remaining data sets are limited to debitage, the one point, and unidentifiable sherds. No evidence of features was encountered. All of the specimens were recovered from 10 to 50 cm in depth.

Much like other prehistoric sites found in the project area, site 31HT686* appears to suffer from soil disturbance, probably due to military activity and/or farming and logging activities. One obvious impact is the presence of a large borrow pit which has eliminated the northern portion of the site, as well the construction of Madison Briar Road through the southern portion of the site. The soil profile, unlike normal Blaney sands, contains an A horizon of dark gray (10YR 4/1) sand which extends to 7 cm. This would indicate that a great deal of deflation has occurred at this site.

It seems unlikely that this site exhibits either the data sets or the integrity to provide meaningful information regarding significant research topics (Townsend et al. 1993:32). The information the site can provide, primarily on Sandhills settlement and association with environmental zones, has been recovered through the current survey. Consequently, we recommend 31HT686* as not eligible for inclusion on the National Register of Historic Places. No further management activities are necessary.

31HT687*/**

Site 31HT687*/** is a multicomponent subsurface prehistoric lithic/historic scatter located 250 m southeast of the intersection of Madison Briar Road and the abandoned railroad bed of the Seaboard Coast Line and 480 m south of North Carolina State Highway 87. The central UTM coordinates are N3903340 E677400. The site elevation is 105 m AMSL (Figure 28).

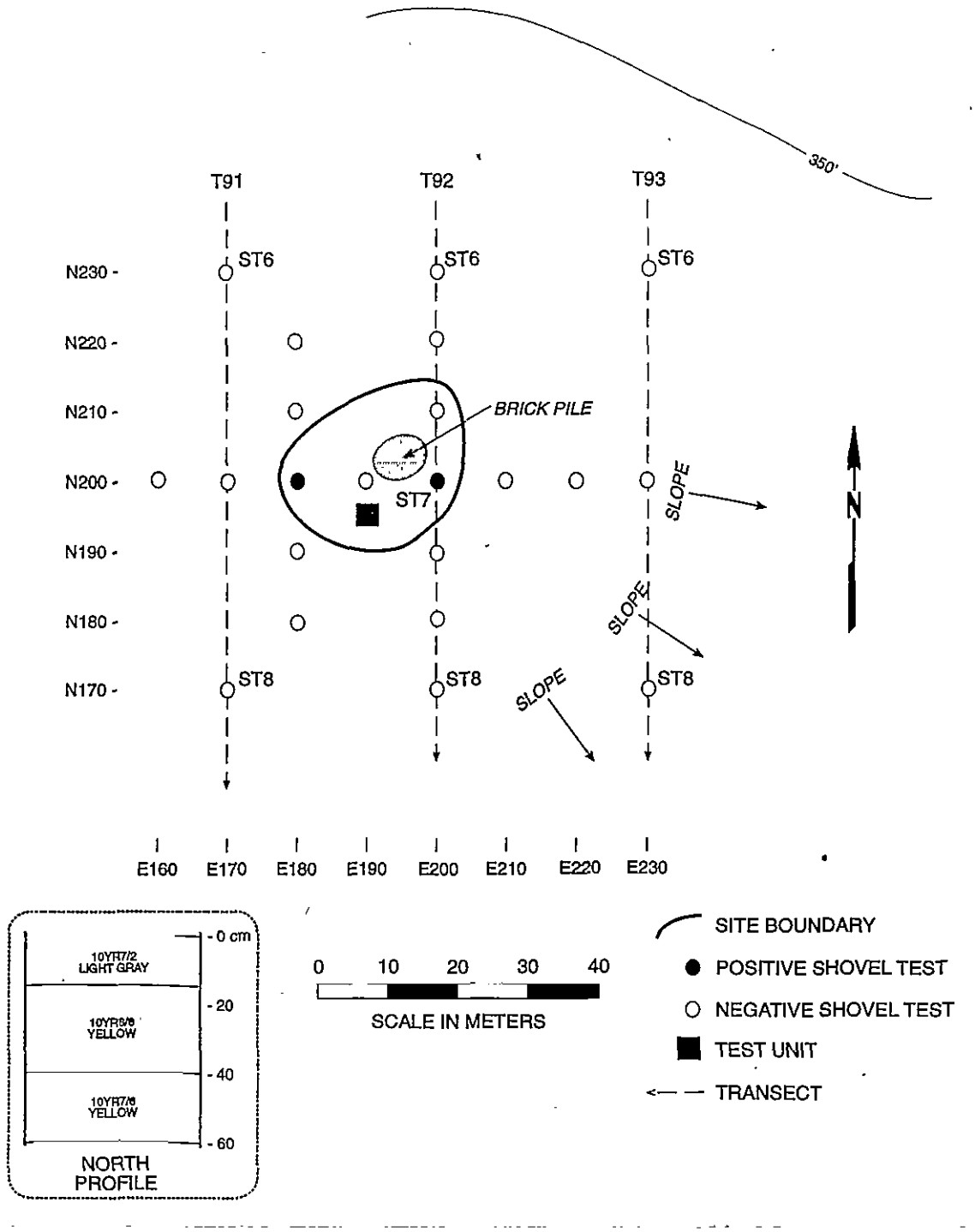

Figure 28. Map of site 31HT687*/** and test unit profile.

The site is situated on a ridge side-slope which gently slopes 380 m to the southeast towards a drainage of Muddy Creek. Vegetation at the site consists of planted pine with a dense scrub oak understory to the south resulting in limited visibility. The site yielded a total of eight artifacts. Site 31HT687*/** was initially discovered during routine shovel testing (ST7 on T92) from which four metavolcanic flakes and two nail fragments were recovered. An additional 15 shovel tests were excavated at 10 m intervals in cardinal directions from the initial positive shovel test. One of these, or 7%, yielded artifacts. One brown salt glazed stoneware ceramic was recovered from N200E180.

A general surface collection conducted during subsurface testing yielded no artifacts. The site dimensions range from 20 m north-south by 30 m east-west, or 600 m².

A 50 cm test unit was centrally located and excavated to a depth of 60 cm. One metavolcanic flake was recovered from the 30 to 40 cm level. The soil profile of the test unit revealed a light gray (10YR 7/2) sand to 15 cm overlaying 25 cm of yellow (10YR 8/6) sand. This is followed by 10 cm of yellow (10YR 7/6) sand. These soils are classified as Blaney loamy sands. The artifacts recovered during testing indicate the presence of a multicomponent prehistoric and historic site. The prehistoric component lacks diagnostic remains. Artifacts recovered from the historic component indicate the presence of a site originating sometime in the late nineteenth or early twentieth centuries. This collection is similar to that found at other dispersed farmsteads at Fort Bragg (Trinkley et al.1996c:105-107). Clearly such sites as 31HT687*/** are important since they have the potential to yield information concerning the presence of dispersed historic home sites in the Fort Bragg area.

Unfortunately, similar to other sites in the project area, 31HT687*/** has been heavily impacted by either military activity and/or logging and farming operations. Blaney loamy sands normally exhibit an A horizon of grayish brown (10YR 5/2) sands to a depth of 23 cm. The loss of about 8 cm of topsoil, as well as the lack of any intact above ground features would suggest that few if any subsurface features remain. Compounding this problem is the use of foundation stones or brick for support of many turn of the century structures (see Trinkley et al. 1996c:72) which would decrease the chances of any subsurface features being present.

As previously mentioned, the exploration of historic settlement in the Fort Bragg area should be a priority. However, this site does not appear to possess either the data sets, or integrity, necessary to address these issues (Townsend et al. 1993:32). The information the site can provide, primarily on Sandhills settlement patterns and association with environmental zone, has been recovered through the current survey. Consequently, site 31HT687*/** is recommended as not eligible for inclusion on the National Register of Historic Places.

31HT688*

Site 31HT688* is a prehistoric lithic subsurface scatter located approximately 400 m south of the intersection of Madison Briar Road and the abandoned railroad bed of the Seaboard Coast Line Railroad and approximately 720 m north of the intersection of Madison Briar and Scotchman Road. The central UTM coordinates are N3903140 E677410. The site elevation is 102 m AMSL (Figure 42).

The site is situated on a terrace ridge which gently slopes 240 m to the southeast towards a drainage of Muddy Creek. Vegetation at the site consists of planted pine with a dense hardwood understory which provided limited surface visibility. Two quartz flakes were recovered during subsurface testing from ST14 on T93. Thirteen additional shovel tests were conducted on a north-south by east-west cruciform pattern. One metavolcanic flake and one quartz flake were recovered from N200 E190. All remaining shovel tests were negative.

A 50 cm. test unit was excavated midway between the two positive units. No artifacts were recovered from the unit, although it did reveal an A horizon of dark gray (10YR4/1) loamy sand

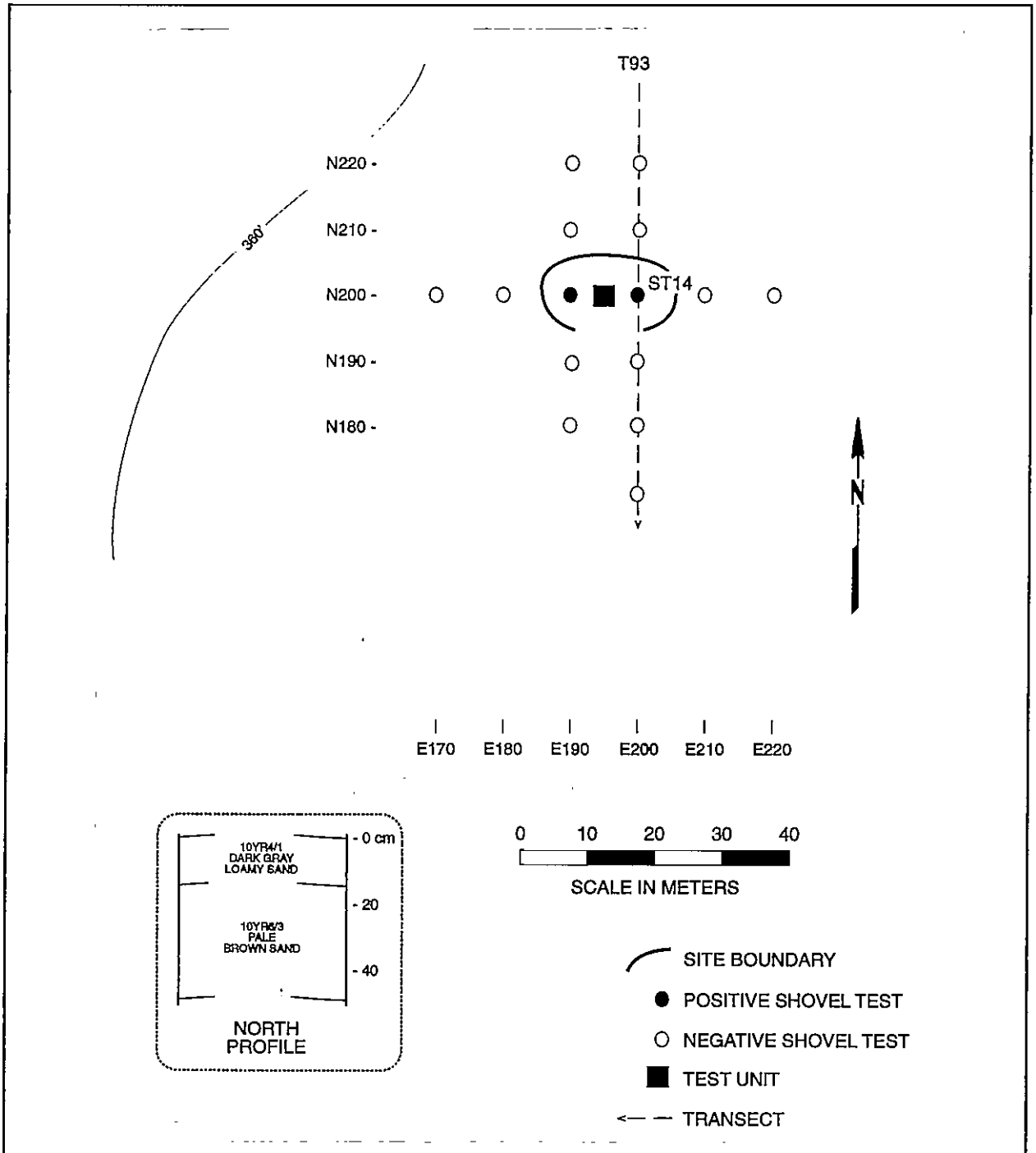

Figure 29. Map of site 31HT688* and test unit profile.

about 15 cm in depth overlying a pale brown (10YR6/3) sand to a depth of 50 cm. The site is situated on Blaney loamy sands and the test unit profile suggests that several centimeters have been lost at the site, probably from cultivation.

The very limited data sets, consisting solely of flakes, coupled with the very low density of remains present, suggests that the site is not able to address any substantive research questions. Consequently, it is recommended as not eligible for inclusion on the National Register of Historic Places.

31HT690*

Site 31HT690* is a prehistoric scatter located 250 m southeast of the intersection of the abandoned railroad bed of the Seaboard Coast Line and Fort Bragg Fire Break Road 2 and 500 m east of the intersection of Fort Bragg Fire Break Road 2 and Scotchman Road. A drainage of Muddy Creek is located 260 m northeast of the site. The central UTM coordinates are N3902360 E677750. The elevation at the site is 104 m AMSL (Figure 30).

The site is situated on a broad east-west ridge top overlooking small drainages to the north and south which flow eastwardly to a tributary of Muddy Creek. Vegetation at the site consists of planted pine and oak with a scrub oak understory resulting in about 35% visibility north of Fire Break 2 and limited surface visibility south of Fort Bragg Fire Break 2. Site 31HT690* was discovered during routine shovel testing (ST47 on T99) from which one metavolcanic flake was collected from the surface and one quartz flake was recovered from the shovel test pit. Although modifications to the scope allowed shovel testing at 10, 15, or 20 m intervals, because of the large number of positive shovel tests along the ridge all shovel tests were dug at 10 m intervals in an effort to delimit individual site loci which might exist. An additional 432 shovel tests were excavated in cardinal directions from ST 50 on T100 (N200E200). All shovel tests were excavated to a depth of 60 to 75 cm when possible. One hundred and forty-eight, or 34%, yielded subsurface remains. A total of 646 artifacts were recovered from shovel tests and the test unit. Cultural remains recovered consist of metavolcanic flakes, quartz flakes and bifaces, metavolcanic and quartz projectile points, and pottery (Table 5).

From shovel tests a range of diagnostic materials were recovered, including a Badin Fabric Impressed sherd (9.95 g) (N180E280) (Coe 1964:28-29), one Hanover Cord Marked sherd (5.28 g) (N210E220), one metavolcanic Gypsy Stemmed projectile point (N310E230), measuring 34.44 mm in length, 23.12 mm in width, and 5.57 mm in thickness, and one eroded Baden sherd (N350E320). These remains suggest a temporal span from the Early to Middle Woodland.

A controlled surface collection was made using a numerically designated 30 m grid. The site dimensions are 270 m north-south by 270 m east-west. This covers an area of about 72,900 m^2 or 7.29 ha. The surface collection recovered a total of 311 artifacts. These included metavolcanic flakes, quartz flakes and bifaces, metavolcanic and quartz projectile points, and pottery (Table 6).

Of specific interest, Collection Unit 1 yielded one Yadkin Cord Marked sherd (Coe 1964:30-31). Collection Unit 2 yielded two Yadkin Fabric Impressed sherds (29.42 g) (Coe 1964:31-32), four Yadkin Cord Marked sherds (38.78 g) (Coe 1964:30-31), and one metavolcanic Morrow Mountain II projectile point, measuring 25.46 mm in length, 16.62 mm in width, and 11.07 mm in thickness (Coe 1964:49-50). Collection Unit 5 yielded one Yadkin Fabric Impressed sherd (11.05 g) (Coe 1964:28-29) and one possible quartz Caraway Triangular projectile point, measuring 10.62 mm in length, 20.26 mm in width, and 4.51 mm in thickness (Coe 1964:67). Collection Unit 6 yielded one Yadkin Cord Marked sherd (16.88 g) (Coe 1964:30-31), one Yadkin Fabric Impressed sherd (14.58 g) (Coe 1964:31-32), and one metavolcanic Guilford Lanceolate projectile point, measuring 54.69 mm in length, 21.03 mm in width, and 14.01 mm in thickness (Coe 1964:43). Collection Unit 8 yielded one Yadkin Fabric Marked sherd (12.69 g) (Coe 1964:31-32). Collection Unit 16 yielded one metavolcanic Guilford Lanceolate projectile point base, measuring 54.30 mm in length, 25.28 mm in width,

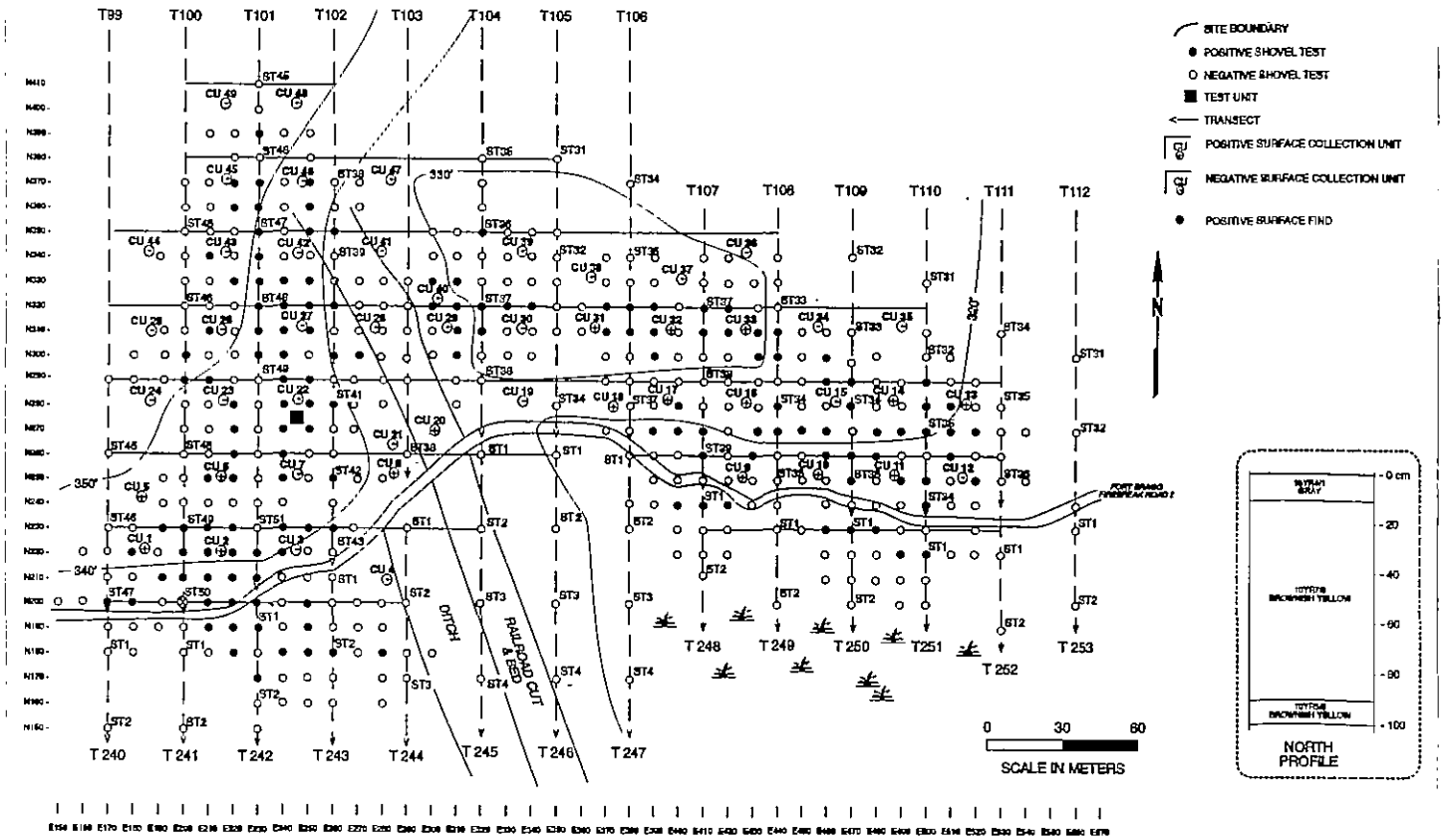

Figure 30. Map of site 31HT690* and test unit profile.

Table 5.
Artifacts Recovered from Subsurface Collections at 31HT690*

	Pottery			Flakes			Biface		Projectile Point		
Unit	UID	Badin	Hanover	M	Q	C	M	C	Gypsy	Hammerstone	RM
N70E230				2							
N180E220				1							
N180E240	1			1	1						
N180E250	2			9	3						
N180E260				1							
N180E280		1									
N190E210				3							
N190E220				3	1						
N190E230				5	1		1				
N190E250				1	2						
N200E170							1				
N200E180					1						
N200E200					1						
N200E210				1							
N200E220	3			1	4						
N200E230					2						
N200E250				1							
N210E190				1	1						
N210E210				2							
N210E210	2			1	1						
N210E220	1		1	9	4						
N210E230				5	2						
N220E180					1	1					
N220E200				1							
N220E210				7	5						
N220E220				1	2						
N220E230				2							
N220E240				1	1						
N220E490					3						
N230E250					1			1			
N230E260				1	2						
N230E460	1										
N230E470				1							
N230E480					2						
N230E500				2	3						
N230E190				1							
N230E200				1	1						
N230E210	1				4						
N230E220					2						
N230E240				4	1						
N240E400				3							
N240E410					1						
N240E420							1				
N240E500				1	1						
N250E210				5							
N250E220				10	6						
N250E240					1						
N250E240				1	4						
N250E260				2							
N250E470					3						
N250E490				2	1						
N250E500				2							
N250E520				1							
N260E220	1			4							
N260E240				2	2						
N260E430				2	1						
N260E460					2						
N260E470					2						
N260E480	1				1						
N260E510				1	2		1				
N270E220				2							
N270E240				4	14						
N270E250				1							
N270E390				1	1						
N270E400				1	3						
N270E410											1
N270E430				1	1						

Table 5, Continued

	Pottery			Flakes			Biface		Projectile Point		
Unit	UID	Badin	Hanover	M	Q	C	M	C	Gypsy	Hammerstone	RM
N270E440				3							
N270E450				2							
N270E460				4	1						
N270E480				5	8						
N270E490				5							
N270E500				1	2						
N270E510					2						
N270E520				1							
N280E220				1							
N280E240				4							
N280E250				5	1						
N280E260				5							
N280E400				3	2						
N280E440				3	5						
N280E470				4							
N280E500				1	1						
N280E510				2							
N290E200				1	1						
N290E210				1							
N290E240					2						
N290E250				4	1						
N290E460				1							
N290E470				1							
N290E500				1							
N300E200				2							
N300E230				3							
N300E240					5						
N300E260					1						
N300E270					2						
N300E310				2							
N300E390				1	1						
N300E430				4							
N300E440							1				
N300E460				1							
N310E210				2	1						
N310E230				6	1				1		
N310E240				8	2						
N310E250				3							
N310E310				5	4						
N310E320				1	1						
N310E370					1						
N310E380				2							
N310E390				1	1						
N310E410				4							
N310E420				1	1						
N310E430					1						
N310E440				1	2					1	
N320E230				9							
N320E240				3							
N320E250				2							
N320E260				2							
N320E300							1				
N320E210				6	1						
N320E320				2							
N320E330				1	1						
N320E340				4	1						
N320E370				4	1						
N320E380				2	2						
N320E390				1	1						
N320E410					1						
N320E420				1							
N330E220					1						
N330E230				1	1						
N330E240				1							
N330E250				1							
N330E300				5	1						
N330E310					1						

Table 5, Continued

	Pottery			Flakes			Biface		Projectile Point		
Unit	UID	Badin	Hanover	M	Q	C	M	C	Gypsy	Hammerstone	RM
N340E210							1				
N340E230				6	1						
N350E230				2							
N350E250				3							
N350E260				1							
N350E320	2	1		1	1						
N360E220				1							
N360E230				4							
N360E250				1	1						
N370E220				1							
N370E230					19						
N370E250				4							
N390E230					2						
TU (0-10 cm)				1							
TU (10-20 cm)	2			16							
TU (20-30 cm)				34	2						
TU (30-40 cm)				46							
TU (40-50 cm)				12	1		1				
TU (50-60 cm)				18	2						
TU (60-70 cm)				4							
TU (70-80 cm)				1	1						
TU (80-90 cm)				2							
TU (90-100 cm)											

M = metavolcanic, Q = quartz, C = chert, RM = raw material
Note all hammerstone and raw material is metavolcanic

Table 6.
Artifacts Recovered from Surface Collections at 31HT690*

	Pottery		Flakes		Biface		Projectile Points				
Unit	UID	Yadkin	M	Q	M	Q	Morrow Mtn.	Gilford	Caraway	Kirk Corner Notched	RM
CU-1	3	1	36	1							
CU-2	5	6	33	17	1		1				
CU-5		1	2	20	1	1			1		
CU-6	2	2	26	10				1			2
CU-8		1		1							
CU-9	6										
CU-10	1		5	24							
CU-11	4		39	36	1	2		1		1	
CU-13			3	4			1				
CU-14	1		3	3							
CU-16			4	3							
CU-17			7	3				2	1		
CU-18			1	1							
CU-20		4									
CU-31			1	2							
CU-32			1	2							
CU-33			1	1							

UID = unidentified, M = metavolcanic, Q = quartz, RM = raw material
Note CU-33 contained 1 hammerstone

and 9.06 mm in thickness (Coe 1964:43), and one metavolcanic Kirk Corner Notched projectile point, measuring 33.19 mm in length, 24.30 mm in width, and 7.10 mm in thickness (Coe 1964:69-70). Collection Unit 17 yielded one quartz Guilford Lancelate projectile point base, measuring 30.02 mm in length, 20.46 mm in width, and 6.79 mm in thickness (Coe 1964:43), one quartz Caraway Triangular projectile point, measuring 20.88 mm in length, 16.58 mm in width, and 3.93 mm in

thickness (Coe 1964:49), and one quartz Guilford Lancelate projectile point base, measuring 24.72 mm in length, 21.23 mm in width, and 10.14 mm in thickness (Coe 1964:43). Collection Unit 20 yielded four Yadkin Fabric Impressed sherds (33.25 g) (Coe 1964:31-32).

A 50 cm test unit, centrally located and excavated to a depth of 100 cm, yielded a total of 139 artifacts. One metavolcanic flake was recovered from the 0 to 10 cm level. Sixteen metavolcanic flakes were recovered from the 10 to 20 cm level. Thirty-four metavolcanic flakes and two quartz flakes were recovered from the 20 to 30 cm level. Thirty-eight metavolcanic flakes and one quartz flake were recovered from the 30 to 40 cm level. Seventeen metavolcanic flakes and two quartz flakes were recovered from the 50 to 60 cm level. Four metavolcanic flakes were recovered from the 60 to 70 cm level. One metavolcanic flake and one quartz flake were recovered from the 80 to 90 cm level and two metavolcanic flakes were recovered from the 90 to 100 cm level. The soil profile of the test unit revealed a dark gray (10YR 4/1) sand to 10 cm overlaying 80 cm of brownish yellow (10YR 7/8) sand. This is followed by 10 cm of brownish yellow (10YR 5/8) sand. These soils are classified as Lakeland sands.

The presence of both pottery and lithics, coupled with the size of the site (7.29 ha), suggests that short term or seasonal occupations may have continued to return to the same area, resulting in the spread of the site. The site was occupied from the end of Early Archaic (represented by the Kirk specimen) through the Middle Archaic (based on the presence of the Guilford and Morrow Mountain points), and into the Late Archaic (represented by the Gypsy point). The following Woodland Period is represented by Badin, Yadkin, and Hanover pottery, as well as the Caraway point. Although no features were identified, materials were found to depths of about 1 m.

Although similar to other prehistoric sites found in the project site, 31HT690* in that soil disturbance and deflation has taken place, this site appears to have suffered less from soil disturbance than others. Although this is probably due to both farming and logging activities which has been found to contribute to soil loss, obvious physical impacts are found in the abandoned Seaboard and Coast Railroad bed which bisects the site on a north-south axis. The site is also bisected by Fort Bragg Fire Break 2 on an east-west axis. The soil profile, not unlike normal Lakeland sands which contain an A horizon of 15 cm, 31HT690* contains an A horizon of 10 cm of dark gray (10YR 4/1) sand. The profile of the test unit, placed along the ridge top, would suggest that about 5 cm of deflation has occurred at the site. Soil profiles from shovel tests placed south of Fort Bragg Fire Break 2, which contain A horizons of upwards from 15 to 20 cm, would suggest that these soils are moving to the southeast towards the drainage.

Very few sites of this magnitude have been recovered at Fort Bragg. Although the information the site can provide, primarily on Sandhills settlement and association with environmental zones, has been recovered through the current survey, the integrity of the soils found at the site would suggest that overall 31HT690* exhibits fewer impacts than that found in many other sites in the Northern Training Area IV survey tract. The presence of a varied amount of lithic materials along with a substantial quantity of pottery would suggest that both data sets and the integrity to provide meaningful information regarding significant research topics concerning prehistoric settlement in the Fort Bragg area may be recovered (Townsend et al. 1993:32). Consequently, we recommend 31HT690* as potentially eligible for inclusion on the National Register of Historic Places.

31HT691**

Site 31HT691** is a historic scatter located due north of Fort Bragg Road 3 approximately 183 m east of the intersection of McRae Ride Road and Fort Bragg Road 3. The central UTM coordinates are N3899640 E675240. The site elevation is 105 m AMSL (Figure 31).

The site is situated on a ridge top which runs east-west and gently slopes 110 m to the south to a drainage of Muddy Creek. Vegetation at the site consists of planted pine with oak and a scrub oak understory which provided 75% surface

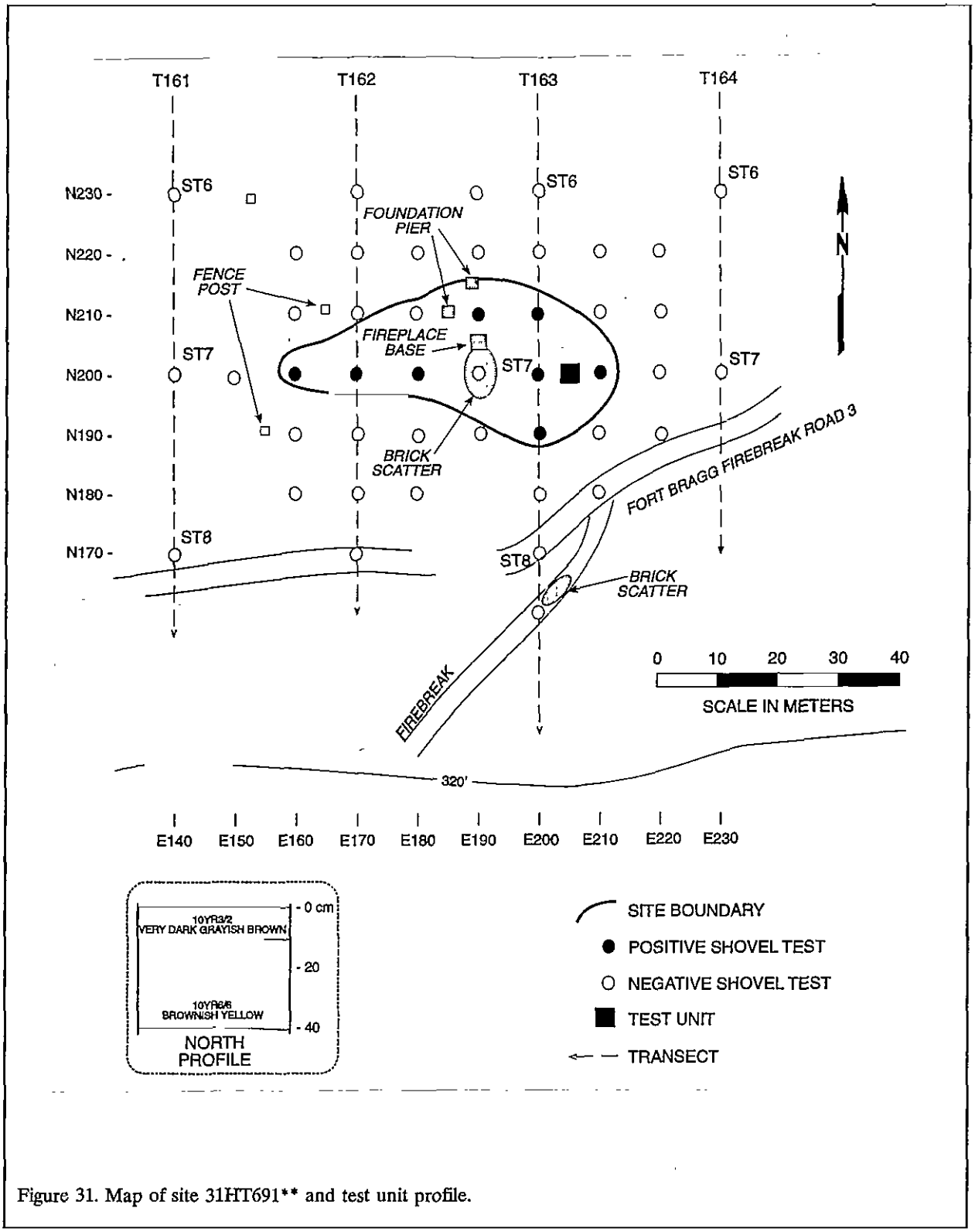

Figure 31. Map of site 31HT691** and test unit profile.

Table 7.
Artifacts Recovered from Surface and Subsurface Collections at 31HT691**

Unit	Number	Type	Unit	Number	Type
Gen Coll	1	WW, undecorated	N200E210	3	clear glass
	4	WW, blue transfer print		1	phonograph record frag
	1	WW, red stamped	N210E190	2	clear glass
	2	WW, blue tinted		1	brown glass
	1	WW, pink & green tint	N210E200	3	clear glass
	2	SW, brown salt glazed	TU (00-10 cm)	6	WW, undecorated
	1	SW, green salt glazed		1	WW, yellow tinted
	2	clear bottle glass		2	SW, brown salt glazed
	1	milk glass		26	clear glass
	1	brown glass		2	brown glass
	1	brass salt shaker lid		1	mirror glass
	2	phonograph record frag.		1	window glass
	1	P door knob fragment		3	can fragments
	1	brass clothing hook		6	nails
	1	iron fire grate fragment		1	button, brass overall
N190E200	4	clear glass		1	plastic hairbrush fragment
	1	nail		2	UID rubber fragments
	3	brown glass		1	brick fragment
N200E160	3	brown glass	TU (10-20 cm)	2	clear glass
N200E170	2	clear glass		3	mails
N200E180	5	clear glass		1	brass zipper pull
	1	light green glass			
	1	window glass			
	3	phonograph record frag.			
	1	plastic twist-top cap frag.			
	1	plastic hair clip frag.			
	2	brick fragments			

WW = whiteware, SW = stoneware, P = porcelain

visibility. The site yielded a total of 115 artifacts. The site was initially located during routine shovel testing (ST7 on T162) which yielded one brick fragment which was not retained. An additional 39 shovel tests were excavated at 10 m intervals on a north-south by east-west cruciform pattern from the original positive shovel test. Of these 7, or 18%, yielded a total of 34 artifacts. These include whiteware, stoneware, glass, and nails (Table 7). A general surface collection conducted during subsurface testing yielded a total of 22 additional artifacts. These included undecorated and decorated whiteware, stoneware, and glass. The site dimensions are 25 m north-south by 50 m east-west, or approximately 1,250 m².

A 50 cm test unit, centrally located and excavated to a depth of 40 cm, yielded a total of 59 artifacts. The unusually large number of artifacts recovered suggests the presence of a trash pile. Fifty-three artifacts were recovered from the 0 to 10 cm level and six artifacts were recovered from the 10 to 20 cm level (Table 6). The soil profile of the test unit revealed a very dark grayish brown (10YR 3/2) sand to a depth of 10 cm overlaying 30 cm of a brownish yellow (10YR 6/7) sand. These soils are classified as Candor sands.

Similar to other sites in the project area, 31HT691** has been impacted by either military activity and/or logging and farming operations. Candor sands normally exhibit an A horizon of dark grayish brown (10YR 4/2) sands to a depth of 8 cm. The 2 cm of additional A horizon soils may be due to a mixing of soils during farming operations. The site is located just south of a

drop zone which is still being plowed. The presence of two brick piers and a chimney base made of native stone would suggest that subsurface features, in the form of post molds, a well, or privy may exist.

Site 31HT691**, due to its possible integrity, may provide information on a broad range of issues concerning pre-military activities at Fort Bragg. This includes information concerning settlement patterns and resulting land use. Study of the foundation piers and chimney base may provide clues to construction techniques from the period. Study of the refuse pile may help determine ethnicity and associated lifeways. Consequently, site 31HT691* is recommended as potentially eligible for inclusion on the National Register of Historic Places.

31HT692*

Site 31HT692* is a prehistoric lithic and ceramic subsurface scatter located 780 m south of Fort Bragg Fire Break Road 2 and 720 m northwest of the intersection of Fort Brag Fire Break Road 3 and Scotchman Road. The central UTM coordinates are N3900700 E676260. The site elevation is 75 m AMSL (Figure 32).

The site is situated on a ridge top which gently slopes primarily to the east. Muddy Creek lies 200 m to the east. Vegetation at the site consists of planted pine and hardwood with a dense scrub oak understory resulting in limited surface visibility. The site yielded a total of 17 artifacts. Site 31HT692* was initially discovered during routine shovel testing (ST26 on T195) from which seven metavolcanic flakes were recovered. An additional 13 shovel tests were excavated at 10 m intervals in cardinal directions from the initial positive shovel test. One (N200E210), or 8%, yielded one clear quartz flake.

A general surface collection conducted during subsurface testing yielded no artifacts. The site dimensions incorporate an area 15 m north-south by 20 m east-west, or about 300 m^2.

A 50 cm test unit, centrally located and excavated to a depth of 50 cm, yielded nine artifacts. Two metavolcanic flakes and two sherds (6.88 g) were recovered from the 0 to 10 cm level. Two quartz flakes were recovered from the 20 to 30 cm level. Three metavolcanic flakes were recovered from the 30 to 40 cm level. The soil profile of the test unit revealed a gray (10YR 6/1) sand to 15 cm overlaying 35 cm of light yellowish brown (10YR 6/4) sand. These soils are classified as Gilead loamy sands.

The artifacts recovered during testing indicate the presence of a prehistoric activity area. The presence of both pottery and lithics suggests that the site was probably the locus of short term seasonal occupation which resulted in an overlap of activity areas. Although one of the 13 excavations (8%) produced artifacts, the data sets are limited to debitage and unidentifiable pottery which, unfortunately, does not indicate a temporal span beyond the general Woodland Period. No evidence was encountered of features. All of the specimens were found from 10 to 40 cm. below the extant surface.

Similar to other prehistoric sites found in the project area, site 31HT692* appears to suffer from soil disturbance, probably due to military activity and/or farming and logging activities. The Gilead sands normally exhibit one A horizon of pale brown (10YR 6/3) sands to a depth of 12 cm below surface and a B horizon of brownish yellow (10YR 6/6) sands to a depth of 20 cm. Although the A horizon for the site appears intact, the B horizon is deeper than expected, perhaps indicating some mixing of the soils, perhaps during either logging or farming operations within the survey tract.

It seems unlikely that this site exhibits either the data sets are the integrity to provide meaningful information regarding significant research topics (Townsend et al. 1993:32). The information the site can provide, primarily on Sandhills settlement and association with environmental zones, has been recovered through the current survey. Consequently, we recommend 31HT692* as not eligible for inclusion on the National Register of Historic Places. No further management activities are necessary.

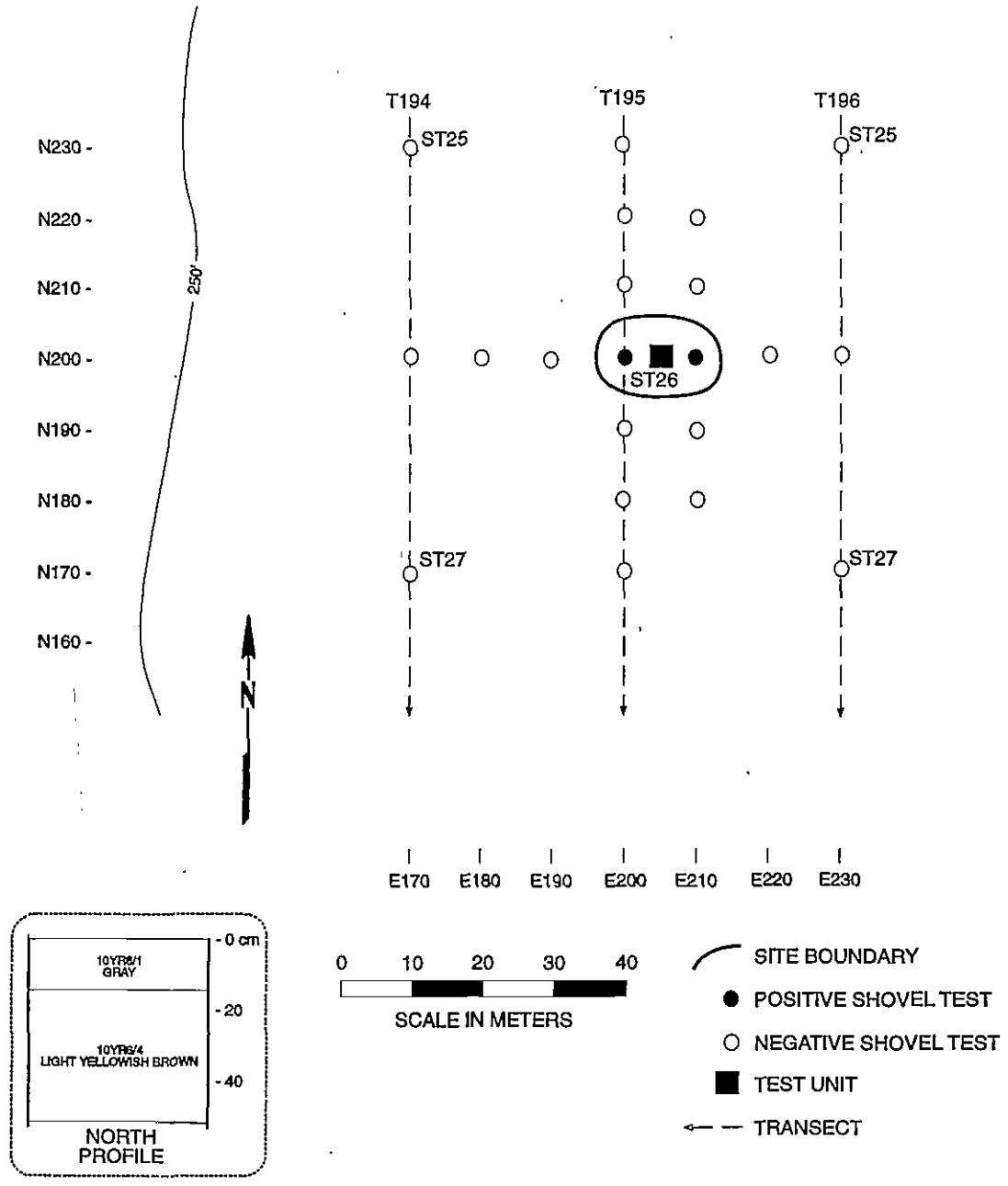

Figure 32. Map of site 31HT692* and test unit profile.

31HT694*

Site 31HT694* is a prehistoric lithic subsurface scatter located approximately 210 m east of the intersection of Scotchman Road and an unnamed fire break road and approximately 30 m north of the fire break road. The central UTM coordinates are N3901360 E677540 and the site elevation is 102 m AMSL (Figure 33).

The site is situated on a ridge top of Blainey loamy sand, which gently slopes 200 m to the southwest towards a drainage of Muddy Creek. Vegetation at the site consists of planted pine with a dense hardwood understory which provided limited surface visibility. One metavolcanic flake and one quartz flake were recovered from ST27 on T231. Thirteen additional shovel tests were conducted on a north-south by east-west cruciform pattern. Two quartz flakes were recovered from N190E200. All remaining shovel tests were negative.

A test unit was excavated midway between the two positive shovel tests which have been used to define the site. This unit failed to produce any additional materials, but was useful in defining the soils in the site area. About 15 cm of dark grayish brown (10YR4/2) sand were found overlying a very pale brown sand (10YR7/4) to a depth of 50 cm. This soil profile is generally typical of the Blainey soils, although it is clear that the A horizon has lost perhaps 7 cm, likely through erosion associated with farming or logging.

The very sparse data sets, coupled with the low density of remains present at this site suggest that it is unlikely to able to answer substantive research questions. As a result, we recommend it not eligible for inclusion on the National Register of Historic Places.

31HT695*

Site 31HT695* is a prehistoric lithic subsurface scatter located 85 m west of the abandoned Seaboard Coast Line Railroad bed and 450 south of Fort Bragg Fire Break Road 2. The central UTM coordinates are N3901875 E677850. The site elevation is 102 m AMSL (Figure 34).

The site is situated on a 5% terrace slope which slopes 80 m to the east toward a drainage of Muddy Creek. Vegetation at the site consists of planted pine and oak with a dense scrub oak understory resulting in limited surface visibility. The site yielded a total of 13 artifacts. Site 31HT695* was initially discovered during routine shovel testing (ST15 on T243) from which one metavolcanic biface tip and three quartz flakes were recovered. An additional 24 shovel tests were excavated at 10 m intervals in cardinal directions from the initial positive shovel test. Four additional shovel tests, or 17%, yielded nine artifacts. Four metavolcanic flakes were recovered from N180E210. One quartz flake was recovered from N200E210. Two metavolcanic flakes were recovered from N210E200 and two metavolcanic flakes were recovered from N210E210.

A general surface collection conducted during subsurface testing yielded no artifacts. The site dimensions range from 35 m north-south by 20 m east-west, or 700 m^2.

A 50 cm test unit was centrally located and excavated to a depth of 50 cm. No additional artifacts were recovered from this unit. The soil profile of the test unit revealed a grayish brown (10YR 5/2) sand to 10 cm overlaying 40 cm of very pale brown (10YR 7/4) sand. These soils are classified as Lakeland sands.

No diagnostic artifacts were encountered during testing, but the site may have been used as a lithic work station. Although four of the 25 shovel tests produced artifacts, the data sets are limited to debitage. No other information would indicate a temporal period for the site's existence. No evidence was encountered of features. All of the specimens were found from 20 to 40 cm.

Similar to other prehistoric sites found in the project area, site 31HT695* appears to suffer from soil disturbance, probably due to military activity and/or farming and logging activities. These soils are classified as Lakeland sands and normally exhibit an A horizon of dark grayish brown (10YR 4/2) sands to a depth of 15 cm below surface and a C horizon of yellowish brown (10YR 5/6) sands to a 1.5 m in depth. Although the A

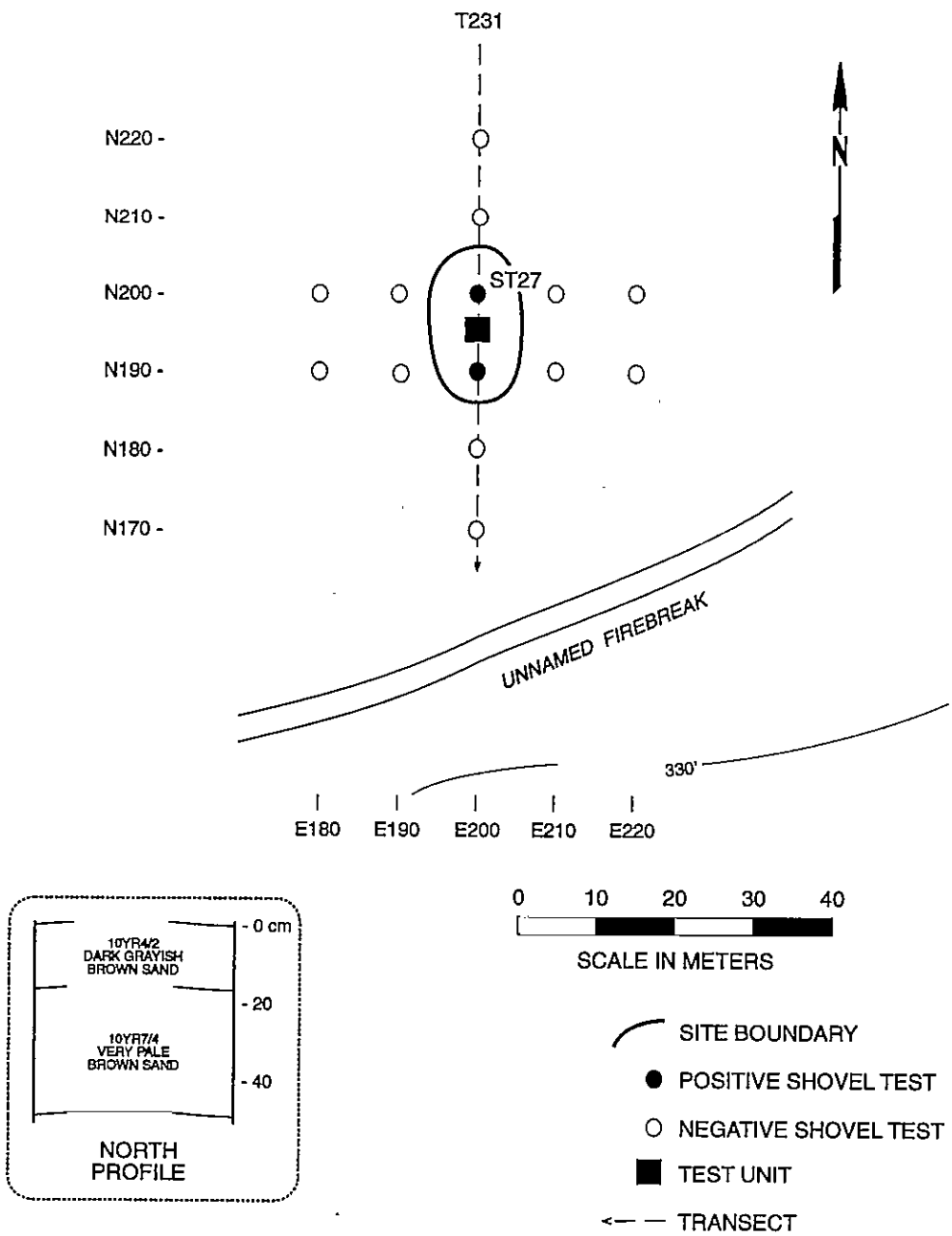

Figure 33. Map of site 31HT694* and test unit profile.

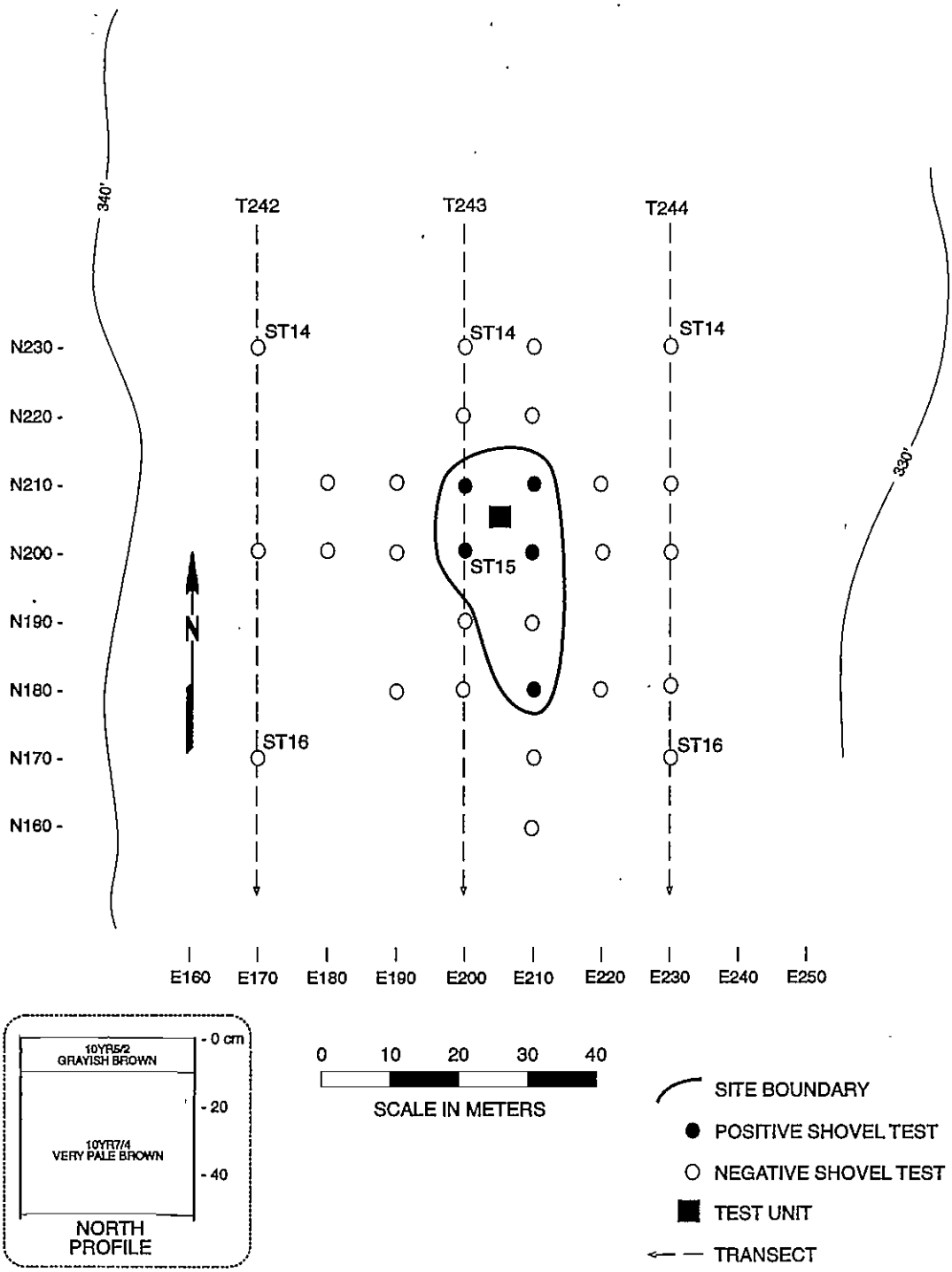

Figure 34. Map of site 31HT695* and test unit profile.

horizon is similar in nature to the typical Lakeland soil profile, it is thinner than expected. Below the A horizon there is no consistency in the soil profiles. This would suggest that the soils have been mixed, probably during either logging or farming operations within the survey tract.

It seems unlikely that this site exhibits either the data sets or the integrity to provide meaningful information regarding significant research topics (Townsend et al. 1993:32). The information the site can provide, primarily on Sandhills settlement and association with environmental zones, has been recovered through the current survey. Consequently, we recommend 31HT695* as not eligible for inclusion on the National Register of Historic Places. No further management activities are necessary.

31HT696*

Site 31HT696* is an Early Archaic subsurface scatter located 120 m west of the abandoned Seaboard Coast Line Railroad bed and 600 south of Fort Bragg Fire Break Road 2. The central UTM coordinates are N3901760 E677880. The site elevation is 101 m AMSL (Figure 35).

The site is situated on a ridge nose with a 10% slope 75 m south toward a drainage of Muddy Creek. Vegetation at the site consists of planted pine and oak with a dense scrub oak understory resulting in limited surface visibility. The site yielded a total of 17 artifacts. Site 31HT696* was initially discovered during routine shovel testing (ST20 on T243) from which one metavolcanic flake was recovered. An additional 28 shovel tests were excavated at 10 m intervals in cardinal directions from the initial positive shovel test. Four additional shovel tests, or 14%, yielded 16 artifacts. One quartz Hardaway Side-Notched projectile point (Coe 1964:67), measuring 27.98 mm in length, 23.94 mm in width, and 5.36 mm in thickness, was recovered from N190E180. Three metavolcanic flakes were recovered from N190E200. Eleven metavolcanic flakes were recovered from N200E210 and one metavolcanic flake was recovered from N200E230.

A general surface collection conducted during subsurface testing yielded no artifacts. The site, based on the positive shovel tests, incorporates an area about 20 m north-south by 55 m east-west, or 1,100 m^2.

A 50 cm test unit was centrally located and excavated to a depth of 50 cm. No additional artifacts were recovered from this unit. The soil profile of the test unit revealed a brown (10YR 4/3) sand to 15 cm overlaying 35 cm of brownish yellow (10YR 6/6) sand. These soils are classified as Lakeland sands.

Although the recovery of one diagnostic artifact, a Hardaway Side-Notched projectile point, places the site in the Early Archaic, additional data sets are limited to debitage. No other information would indicate a temporal period for the sites existence. This suggests that the site may have been used as a lithic work station. No evidence was encountered of features. All of the specimens were found from 20 to 40 cm below the surface level.

Similar to other prehistoric sites found in the project area, site 31HT696* appears to suffer from soil disturbance, probably due to military activity and/or farming and logging activities. These soils are classified as Lakeland sands and normally exhibit one A horizon of dark grayish brown (10YR 4/2) sands to a depth of 15 cm below surface and a C horizon of yellowish brown (10YR 5/6) sands to a depth of 1.5 m. Although the A horizon is similar in nature to the typical Lakeland soil profile, there is no consistency in the strata below the A horizon. This would suggest that the soils have been mixed and probably occurred during either logging or farming operations within the survey tract.

It seems unlikely that this site exhibits either the data sets or the integrity to provide meaningful information regarding significant research topics (Townsend et al. 1993:32). The information the site can provide, primarily on Sandhills settlement and association with environmental zones, has been recovered through the current survey. Consequently, we recommend 31HT696* as not eligible for inclusion on the National Register of Historic Places. No further

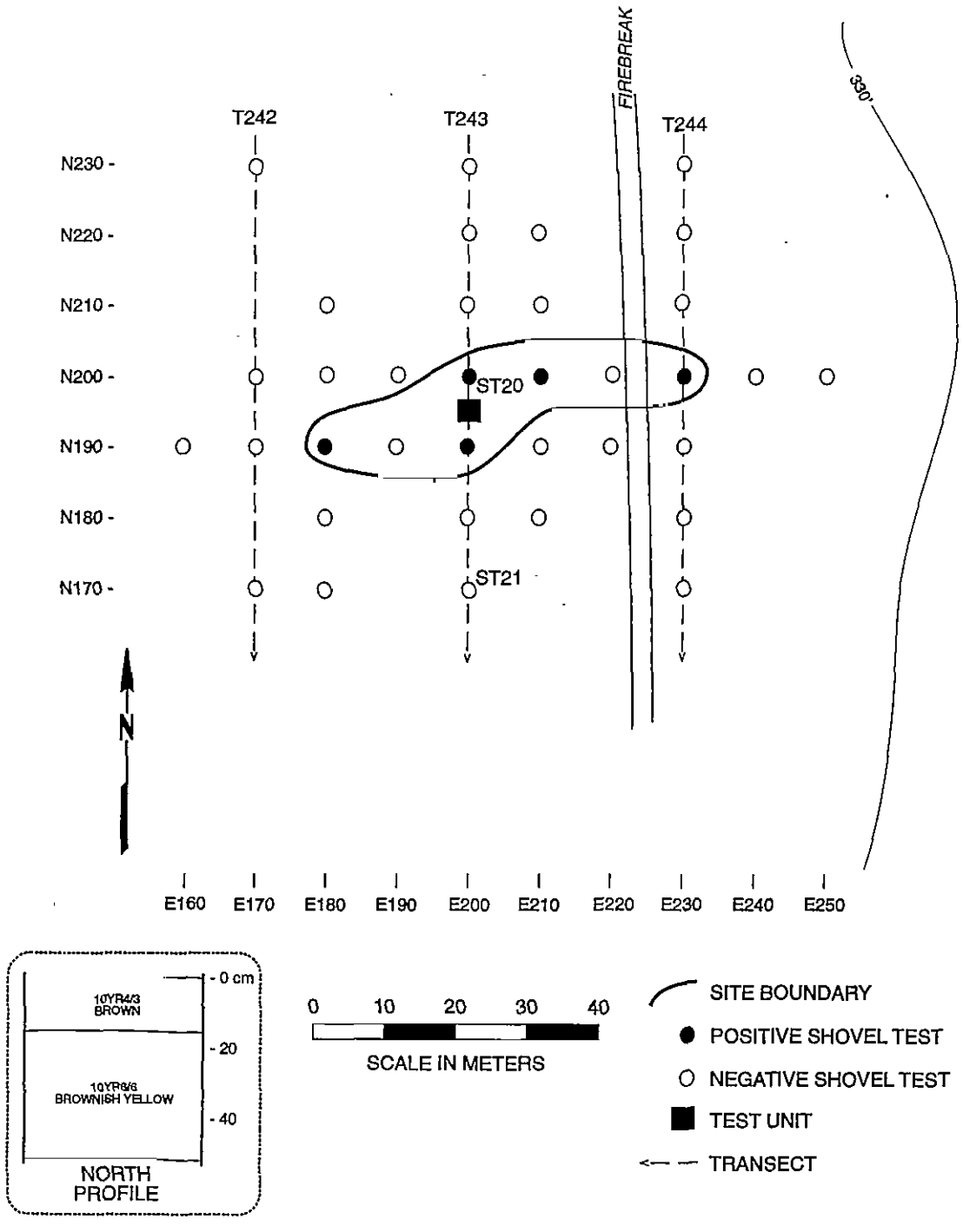

Figure 35. Map of Site 31HT696* and test unit profile.

management activities are necessary.

31HT697**

Site 31HT697** is a historic scatter located due west of the abandoned Seaboard Coast Line Railroad bed and 450 m south of Fort Bragg Fire Break Road 2. The central UTM coordinates are N3901875 E677960. The site elevation is 96 m AMSL (Figure 36).

The site is situated on a ridge slope (10%) which slopes to the southeast toward a small pond formed by a drainage of Muddy Creek. Vegetation at the site consists of mixed hardwood and planted pine with a scrub oak understory which provided limited surface visibility. The site yielded a total of 26 artifacts. The site was initially located during routine shovel testing (ST14 on T246) which yielded one clear window glass fragment, six nail fragments, and one screw fragment. An additional 20 shovel tests were excavated at 10 m intervals on a north-south by east-west cruciform pattern from the original positive shovel test. Of these three, or 15%, yielded a total of six artifacts. One brown glass fragment and one nail fragment were recovered from N190E190. One fragment of aqua glass was recovered from N200E170 and two nail fragments and one unidentified metal fragment were recovered from N200E190.

A general surface collection was conducted during subsurface testing. One undecorated whiteware fragment and one clear, bottle glass fragment were collected. The site dimensions are 35 m north-south by 40 m east-west, or approximately 1,400 m².

A 50 cm test unit was centrally located and excavated to a depth of 50 cm. A total of 10 artifacts were recovered from this unit. One fragment of aqua glass and four nail fragments were recovered from the 0 to 10 cm level. One gray salt glazed stoneware ceramic, one clear window glass fragment, and three nail fragments were recovered from the 10 to 20 cm level. The soil profile of the test unit was a black (10YR 2/1) loamy sand to 25 cm overlaying 25 cm of light yellowish brown (10YR 6/4) sand. These soils are classified as Lakeland sands.

The artifacts recovered during testing indicate the presence of a domestic site originating sometime in the early twentieth century. This collection is similar to that found at other dispersed farmsteads at Fort Bragg (Trinkley et al. 1996c:105-107). Clearly such sites as 31HT697** are important since they have the potential to yield information concerning the presence of dispersed historic home sites in the Fort Bragg area.

Unfortunately, similar to other sites in the project area, 31HT697** has been heavily impacted by either military activity and/or logging and farming operations. These soils are classified as Lakeland sands and normally exhibit an A horizon of dark grayish brown (10YR 4/2) sands to a depth of 15 cm below surface and a C horizon of yellowish brown (10YR 5/6) sands to a depth of 1.5 m. Similar to other sites found on swamp margins 31HT697** exhibits characteristics of both deflation and deposition. This has resulted in a mixing of the soils within the A horizon with an additional 10 cm of soil. No above ground features exist other than a general scatter of brick throughout the site. The use of foundation stones or brick for support of many turn of the century structures (see Trinkley et al. 1996c:72) would decrease the chances of any subsurface features being present. No privy or well depressions were located at this site.

It is probable that these remains are those of a dispersed farmstead. Although the exploration of historic settlement in the Fort Bragg area should be a priority, this site does not appear to possess either the data sets, or integrity, necessary to address these issues (Townsend et al. 1993:32). The information the site can provide, primarily on Sandhills settlement patterns and association with environmental zones, has been recovered through the current survey. Consequently, site 31HT697** is recommended as not eligible for inclusion on the National Register of Historic Places.

31HT699*

Site 31HT699* is a prehistoric lithic subsurface scatter located 60 m west of the

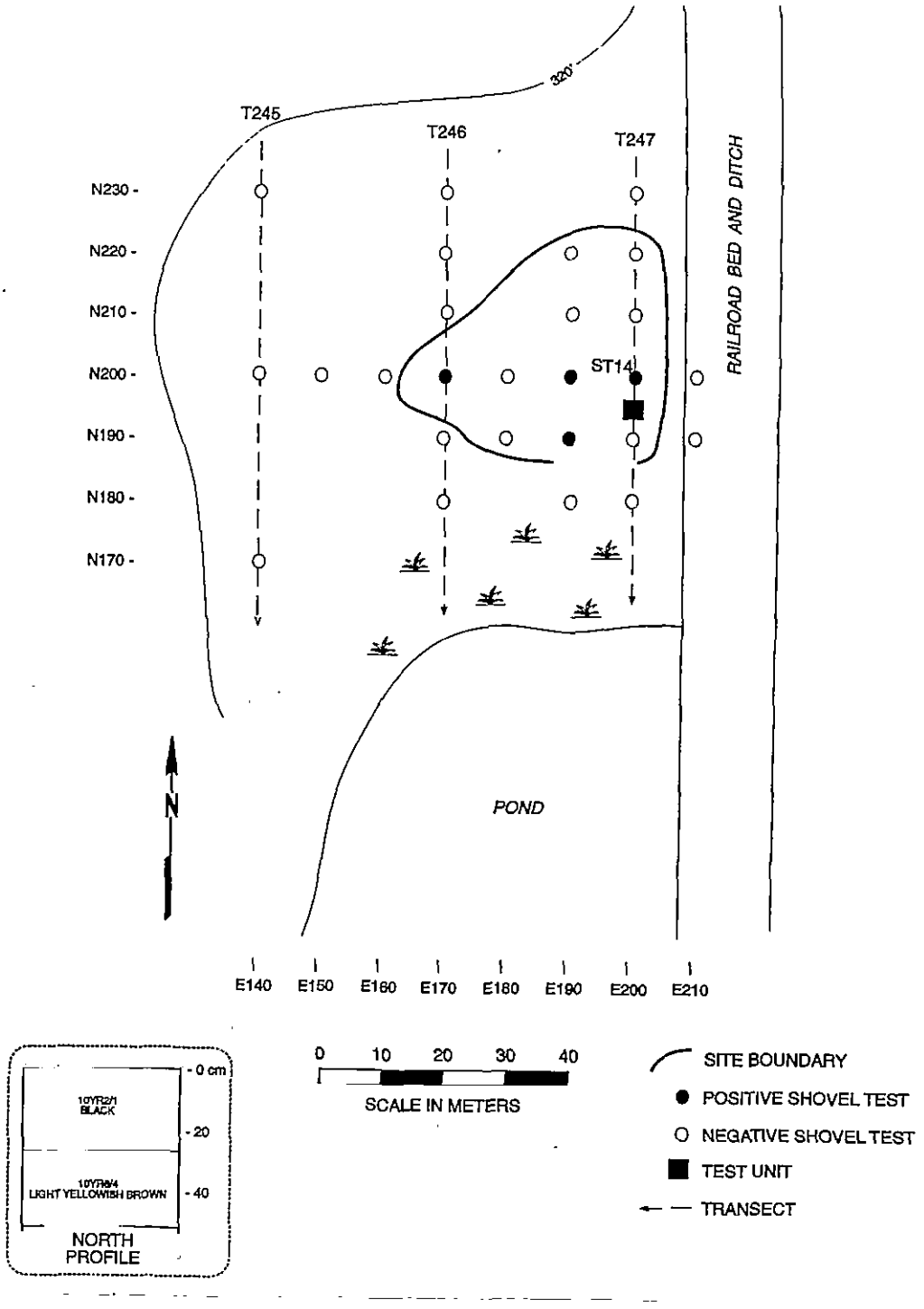

Figure 36. Map of site 31HT697** and test unit profile.

abandoned Seaboard Coast Line Railroad bed and 570 south of Fort Bragg Fire Break Road 2. The central UTM coordinates are N3901700 E677950. The site elevation is 99 m AMSL (Figure 37).

The site is situated on a terrace knoll which gently slopes to the north and east. A drainage of Muddy Creek lies 280 m to the northeast. Vegetation at the site consists of planted pine and oak with a dense scrub oak understory resulting in limited surface visibility. The site yielded a total of 53 artifacts. Site 31HT699* was initially discovered during routine shovel testing (ST19 on T247) from which one quartz flake was recovered. An additional 35 shovel tests were excavated at 10 m intervals in cardinal directions from the initial positive shovel test. Six additional shovel tests, or 17%, yielded 26 artifacts. One metavolcanic flake was recovered from N180E180. Five metavolcanic flakes were recovered from N200E160. Seven quartz flakes were recovered from N200E170. Six metavolcanic flakes and one quartz flake were recovered from N200E180. One metavolcanic flake and one quartz flake were recovered from N200E190 and four metavolcanic flakes were recovered from N200E210.

A general surface collection conducted during subsurface testing yielded no artifacts. The site dimensions incorporate an area about 25 m north-south by 55 m east-west, or about 1,375 m².

A 50 cm test unit, centrally located and excavated to a depth of 70 cm, yielded 26 artifacts. One quartz flake was recovered from the 0 to 10 cm level. Two metavolcanic flakes and three quartz flakes were recovered from the 10 to 20 cm level. Four metavolcanic flakes and four quartz flakes were recovered from 20 to 30 cm. Five metavolcanic flakes and five quartz flakes were recovered from the 30 to 40 cm level and two quartz flakes were recovered from the 40 to 50 cm level. The soil profile of the test unit revealed a gray (10YR 6/1) sand to 15 cm overlaying 45 cm of yellow (10YR 7/6) sand. This is followed by 10 cm of yellowish brown (10YR 5/6) sand. These soils are classified as Lakeland sands.

No diagnostic artifacts were encountered during close interval testing, but the site may have been used as a lithic work station. Although six of the 35 shovel tests produced artifacts, the data sets are limited to debitage. No evidence was encountered of features. All of the specimens were found from 5 to 50 cm.

Similar to other prehistoric sites found in the project area, site 31HT699* appears to suffer from soil disturbance, probably due to military activity and/or farming and logging activities. These soils are classified as Lakeland sands and normally exhibit an A horizon of dark grayish brown (10YR 4/2) sands to a depth of 15 cm below surface and a C horizon of yellowish brown (10YR 5/6) sands to a depth of 1.5 m. Although the A horizon is similar in nature to the typical Lakeland soil profile, there is no consistency in the soil profiles below the A horizon. This suggests that the soils have been mixed, probably during either logging or farming operations within the survey tract.

It seems unlikely that this site exhibits either the data sets or the integrity to provide meaningful information regarding significant research topics (Townsend et al. 1993:32). The information the site can provide, primarily on Sandhills settlement and association with environmental zones, has been recovered through the current survey. Consequently, we recommend 31HT699* as not eligible for inclusion on the National Register of Historic Places. No further management activities are necessary.

31HT700*

Site 31HT700* is a prehistoric lithic scatter located 720 m south of the intersection of the abandoned railroad bed of the Seaboard Coast Line and Fort Bragg Fire Break Road 2 and 1,450 m southeast of the intersection of Madison Briar Road and Scotchman Road. The central UTM coordinates are N3901575 E677950. The site elevation is 98 m AMSL (Figure 38).

The site is situated on a ridge top which slopes to the southeast. A drainage of Muddy Creek is located 100 m to the south. Vegetation at this site consists of mixed planted pine with oak

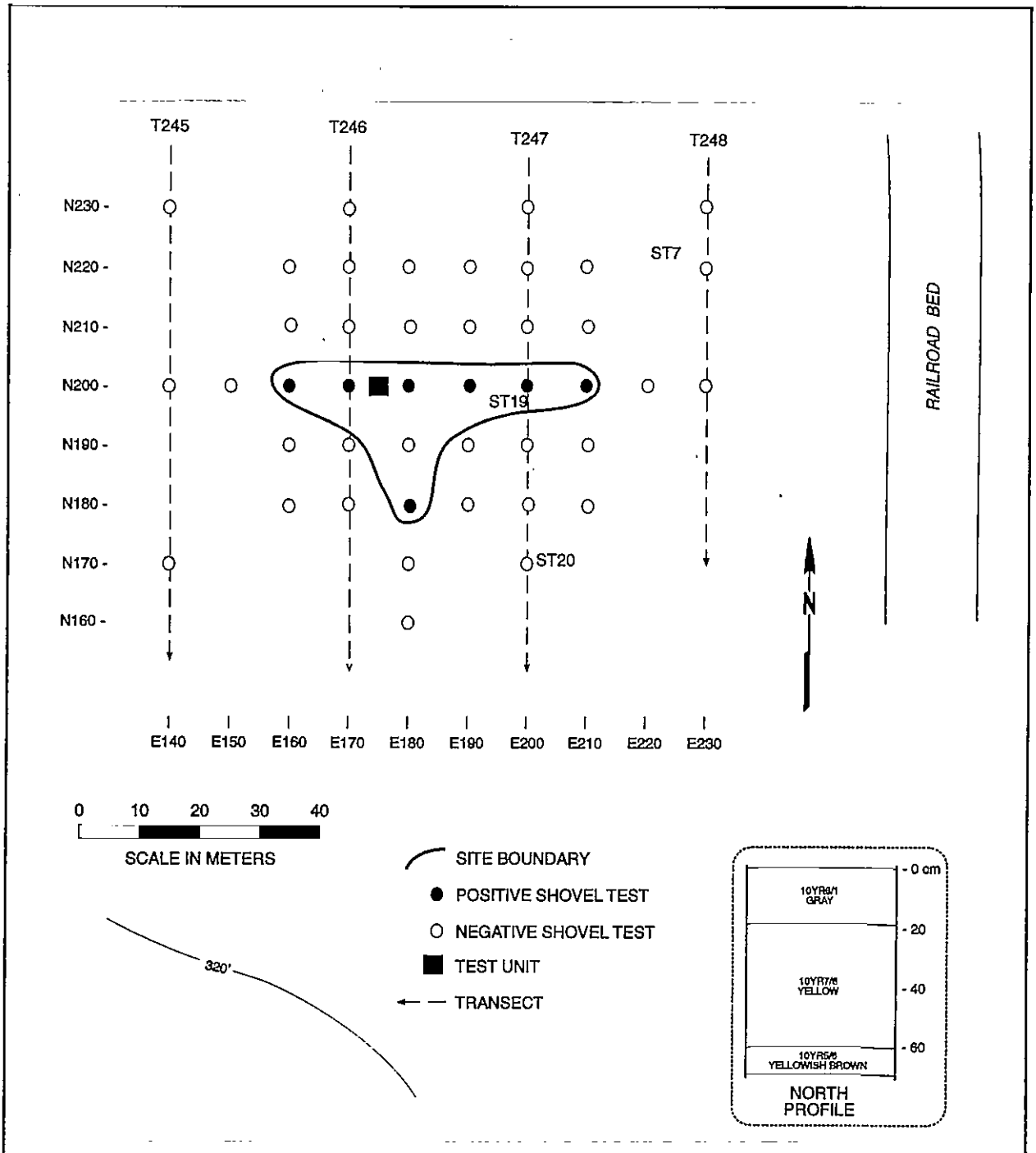

Figure 37. Map of site 31HT699* and test unit profile.

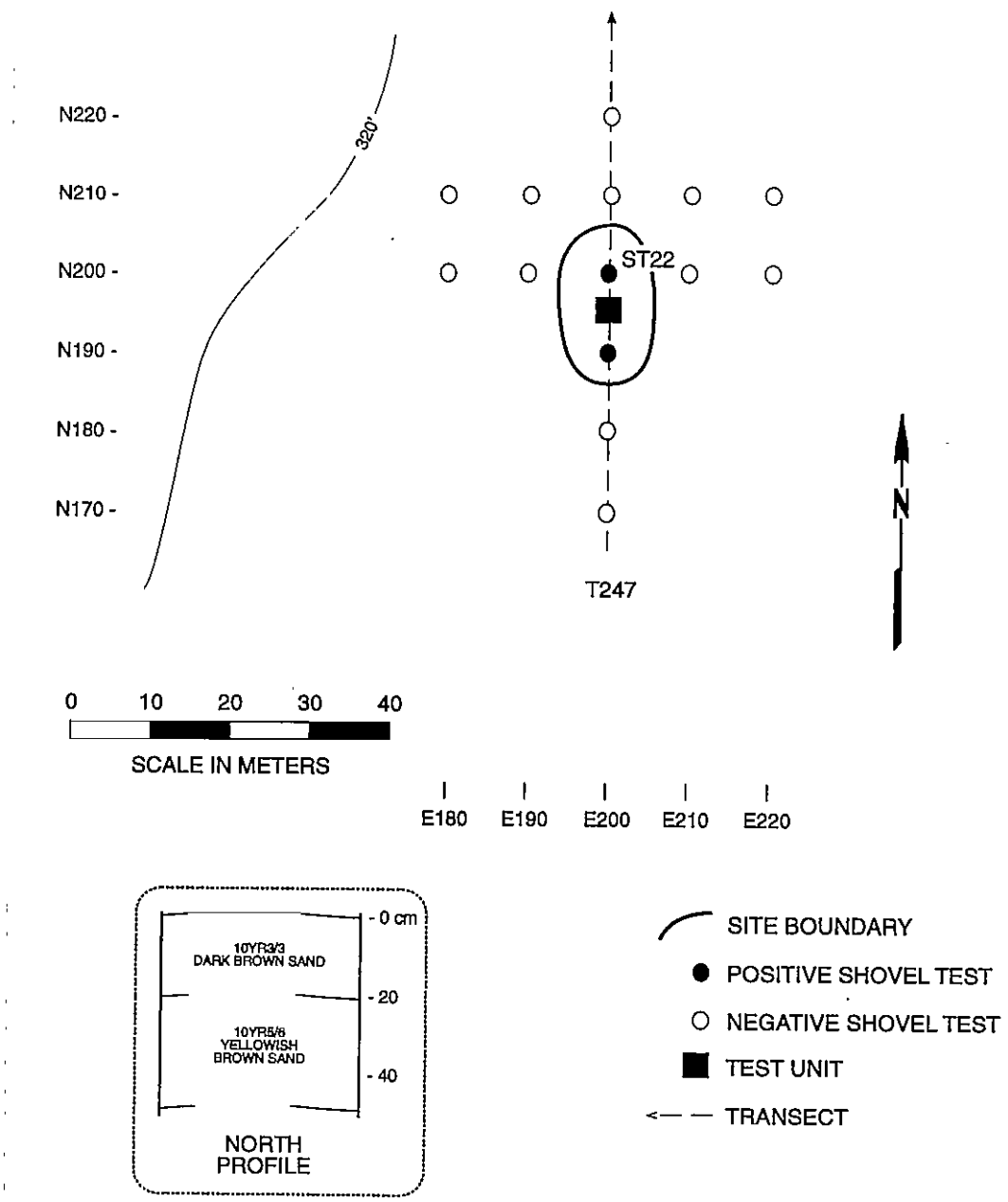

Figure 38. Map of site 31HT700* and test unit profile.

and scrub oak understory. One metavolcanic flake and one quartz flake were recovered during subsurface testing from ST22 on T247. Twelve additional shovel tests were excavated in cardinal directions. One, N210E200, yielded three metavolcanic flakes. All other shovel tests were negative.

A 50 cm test unit was excavated midway between the two positive tests. Although no artifacts were encountered, the unit did provide information on the profile of the Lakeland sands which are found in the site area. The unit revealed about 20 cm of dark brown (10YR3/3) sand overlying 30 cm of yellowish brown (10YR5/6) sand.

Although there is no indication of deflation at this site, a rather unusual situation for the Fort Bragg area, the data sets are very sparse and the site exhibits a very low density of remains. It is unlikely that 31HT700* can address substantive research questions. As a result, the site is recommended as not eligible for inclusion on the National Register of Historic Places.

31HT703*

Site 31HT703* is a prehistoric lithic and ceramic subsurface scatter located 150 m east of the abandoned Seaboard Coast Line Railroad bed and 240 south of Fort Bragg Fire Break Road 2. The central UTM coordinates are N3902200 E677980. The site elevation is 95 m AMSL (Figure 39).

The site is situated on a swamp margin with a 2% slope 60 m north towards a drainage of Muddy Creek. Vegetation at the site consists of planted pine and hardwood with a dense scrub oak understory resulting in limited surface visibility. The site yielded a total of 21 artifacts. Site 31HT703* was initially discovered during routine shovel testing (ST8 on T248) from which one quartz flake was recovered. An additional 17 shovel tests were excavated at 10 m intervals in cardinal directions from the initial positive shovel test. Two additional shovel tests, or 12%, yielded 8 artifacts. Four metavolcanic flakes were recovered from N190E190 and four metavolcanic flakes were recovered from N200E190.

A general surface collection conducted during subsurface testing yielded no artifacts. The site dimensions range from 20 m north-south by 20 m east-west, or 400 m^2.

A 50 cm test unit was centrally located and excavated to a depth of 80 cm. A total of 12 artifacts were recovered from this unit. Two quartz flakes were recovered from the 10 to 20 cm level. Four metavolcanic flakes were recovered from the 20 to 30 cm level. One quartz flake was recovered from the 30 to 40 cm level. One metavolcanic flake was recovered from the 40 to 50 cm level. One metavolcanic flake and three quartz flakes were recovered from the 50 to 60 cm level. The soil profile of the test unit revealed a gray (10YR 5/1) sand to 10 cm overlaying 10 cm of yellowish brown (10YR 5/4) sand. This is followed by 55 cm of light yellowish brown (10YR 6/4) sand over 5 cm of brownish yellow (10YR 6/6) sand. These soils are classified as Gilead sands.

No diagnostic artifacts were encountered during close interval testing, but the site may have been used as a lithic work station. Only two of the 18 shovel tests produced artifacts and the data sets are limited to debitage. No evidence was encountered of features. All of the specimens were found from 10 to 50 cm.

Similar to other prehistoric sites found in the project area, site 31HT703* appears to suffer from soil disturbance, probably due to military activity and/or farming and logging activities. These soils are classified as Gilead sands and normally exhibit one A horizon of pale brown (10YR 6/3) sands to a depth of 13 cm below surface and a B horizon of brownish yellow (10YR 6/6) sands to a depth of 20 cm. Although the A horizon for the site seems intact with only 3 cm less A horizon than the typical profile, the Bt1 horizon lacks at least 10 cm of soil than the typical Gilead soil profile. This would suggest that the soils have been deflated, probably by either logging or farming operations, with a new A horizon forming in the recent past.

It seems unlikely that this site exhibits

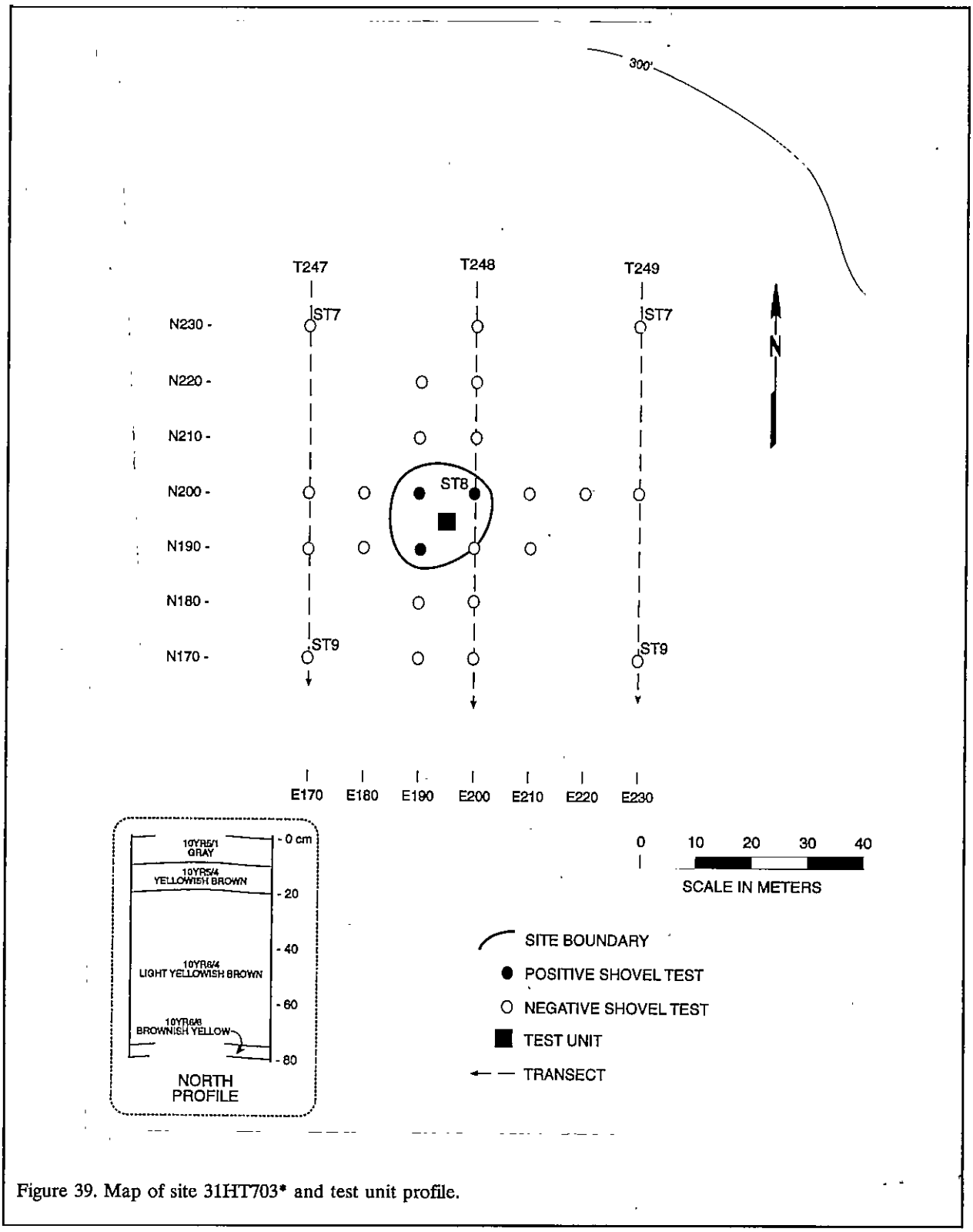

Figure 39. Map of site 31HT703* and test unit profile.

either the data sets or the integrity to provide meaningful information regarding significant research topics (Townsend et al. 1993:32). The information the site can provide, primarily on Sandhills settlement and association with environmental zones, has been recovered through the current survey. Consequently, we recommend 31HT703* as not eligible for inclusion on the National Register of Historic Places. No further management activities are necessary.

31HT707*

Site 31HT707* is a Woodland Period subsurface scatter located 210 m east of the abandoned Seaboard Coast Line Railroad bed and 180 south of Fort Bragg Fire Break Road 2. The central UTM coordinates are N3902090 E678020. The site elevation is 95 m AMSL (Figure 40).

The site is situated on a small ridge top with a slope of 5 to 10%, to the north, east, and southeast. A drainage of Muddy Creek lies 60 m to the east. Vegetation at the site consists of planted pine with a dense scrub oak understory resulting in limited surface visibility. The site yielded a total of 31 artifacts. Site 31HT707* was initially discovered during routine shovel testing (ST9 on T251) from which two metavolcanic flakes were recovered. An additional 49 shovel tests were excavated at 10 m intervals in cardinal directions from the initial positive shovel test. Eleven shovel tests, or 22%, yielded 26 artifacts. Two metavolcanic flakes were recovered from N190E220. One metavolcanic flake and two quartz flakes were recovered from N190E230. Two metavolcanic flakes were recovered from N200E170. Two quartz flakes were recovered from N200E220. Five metavolcanic flakes were recovered from N210E170. Three metavolcanic flakes were recovered from N210E190. One metavolcanic flake was recovered from N210E200. One metavolcanic flake was recovered from N210E210. One metavolcanic flake was recovered from N220E200. Three metavolcanic flakes and one quartz flake were recovered from N220E220, and one metavolcanic flake and one sherd (4.50 g) were recovered from N230E200.

A general surface collection conducted during subsurface testing yielded no artifacts. The site dimensions range from 45 m north-south by 60 m east-west, or 2,700 m².

A 50 cm test unit, centrally located and excavated to a depth of 70 cm, yielded three artifacts. One quartz flake was recovered from the 0 to 10 cm level. One metavolcanic flake was recovered from the 20 to 30 cm level and one metavolcanic flake was recovered from the 40 to 50 cm level. The soil profile of the test unit revealed a brown (10YR 5/3) sand to 10 cm overlaying 50 cm of brownish yellow (10YR 6/6) sand. This is followed by 10 cm of yellowish brown (10YR 5/6) sand. These soils are classified as Lakeland sands.

The artifacts recovered during testing indicate the presence of a prehistoric activity area. The presence of both pottery and lithics suggests that the site was probably the locus of short term seasonal occupation which resulted in an overlap of activity areas. Although 11 of the 49 excavations (22%) produced artifacts, the data sets are limited to debitage and unidentifiable pottery which, unfortunately, fails to refine the temporal association. No evidence of features was encountered. All of the specimens were recovered from 10 to 50 cm.

Similar to other prehistoric sites found in the project area, site 31HT707* appears to suffer from soil disturbance, probably due to military activity and/or farming and logging activities. These soils are classified as Lakeland sands and normally exhibit an A horizon of dark grayish brown (10YR 4/2) sands to a depth of 15 cm below surface and a C horizon of yellowish brown (10YR 5/6) sands to 1.5 m in depth. Although the A horizon is similar in nature to the typical Lakeland soil profile, lacking about 5 cm, there is no consistency in the soil profiles below the A horizon. This would suggest that the soils have been mixed, probably during either logging or farming operations.

It seems unlikely that this site exhibits either the data sets or the integrity to provide meaningful information regarding significant research topics (Townsend et al. 1993:32). The information the site can provide, primarily on

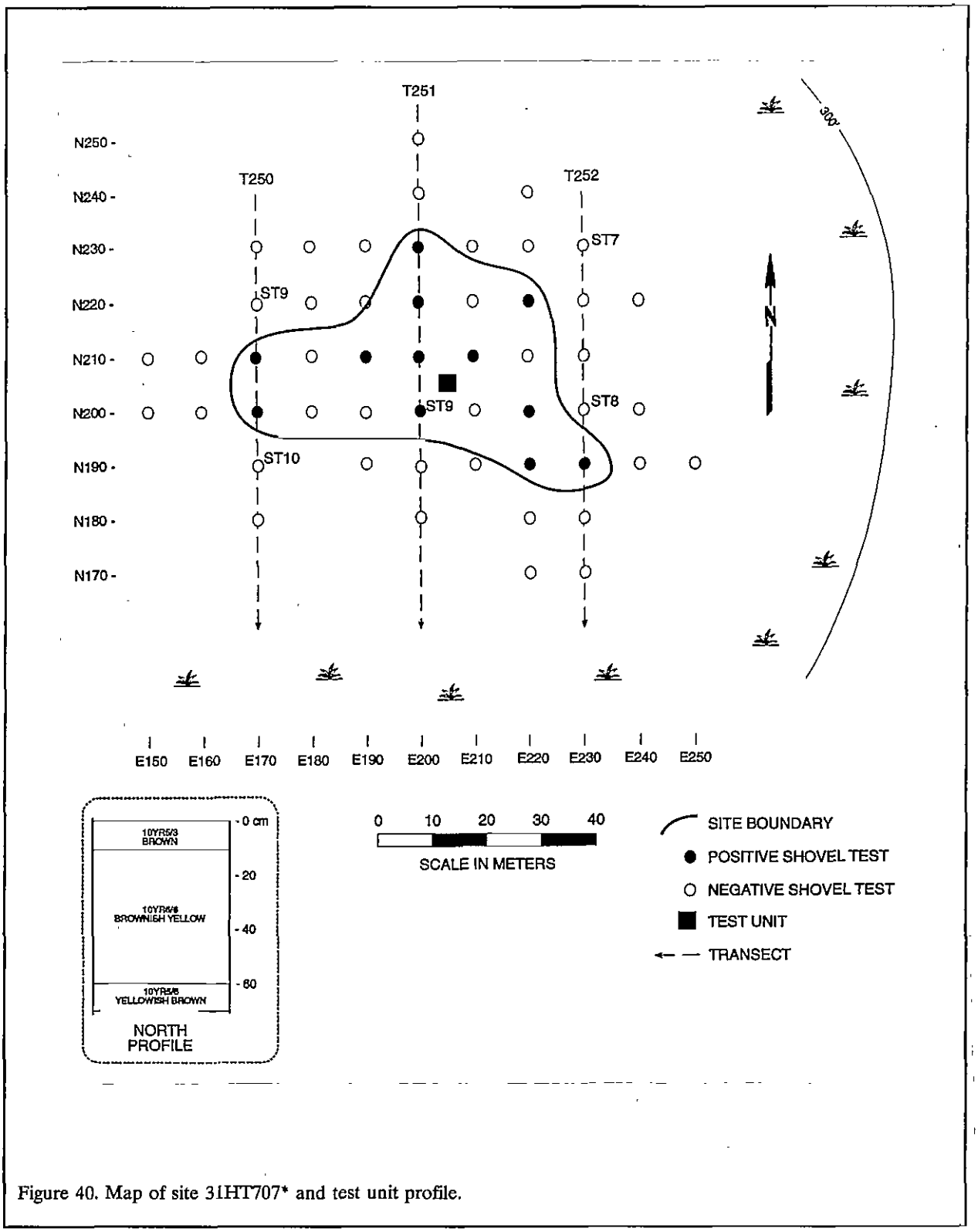

Figure 40. Map of site 31HT707* and test unit profile.

Sandhills settlement and association with environmental zones, has been recovered through the current survey. Consequently, we recommend 31HT707* as not eligible for inclusion on the National Register of Historic Places. No further management activities are necessary.

31HT708*

Site 31HT708* is a prehistoric lithic and pottery surface and subsurface scatter located 150 m east of the abandoned Seaboard Coast Line Railroad bed and 210 m southeast of the Fort Bragg Reservation boundary road. The central UTM coordinates are N3901480 E678250. The site elevation is 99 m AMSL (Figure 41).

The site is situated on a ridge slope on the northwest corner of a borrow pit. The site slopes to a drainage of Muddy Creek which lies about 100 m to the west. Vegetation at the site consists of wire grass, planted pine with a dense scrub oak understory, resulting in limited surface visibility. Surface visibility within the borrow pit was 100%. The site yielded a total of 57 artifacts.

Site 31HT708* was initially discovered during routine shovel testing (ST19 on T256) from which three quartz flakes were recovered. An additional 30 shovel tests were excavated at 10 m intervals in cardinal directions from the initial positive shovel test. Five additional shovel tests, or 17%, yielded 21 artifacts. Nine metavolcanic flakes were recovered from N160E210. One metavolcanic flake and two quartz flakes were recovered from N170E210. One metavolcanic flake, three quartz flakes, and one metavolcanic Kirk Stemmed projectile point (Coe 1964:70), measuring 62.29 mm in length, 19.52 mm in width, and 10.08 mm in thickness, from N180E210. One metavolcanic flake was recovered from N190E200. Two metavolcanic flakes and one quartz flake were recovered from N190E210.

A general surface collection was conducted during subsurface testing and yielded a total of 23 artifacts. Artifacts included eight metavolcanic flakes, four quartz flakes, and 11 sherds (28.15 g). The site dimensions range from 40 m north-south by 20 m east-west, or 800 m^2.

A 50 cm test unit, centrally located and excavated to a depth of 50 cm, yielded 10 artifacts. Two sherds (4.65 g) were recovered from the 0 to 10 cm level. Four metavolcanic flakes and one sherd (7.48 g) were recovered from 10 to 20 cm. Three metavolcanic flakes were recovered from 20 to 30 cm. The soil profile of the test unit was dark gray (10YR 4/1) sands to a depth of 10 cm overlaying 35 cm of brownish yellow (10YR 6/6) sand. This is followed by 5 cm of yellow (10YR 7/8) sand. These soils are classified as Gilead sands.

The recovery of one diagnostic lithic artifact, a Kirk Stemmed projectile point, temporally places the site in the Archaic Period. Additional data sets are limited to debitage and undiagnostic pottery, which of course documents occupation into the Woodland Period. 31HT708* may have functioned as a limited activity site. No evidence of features was encountered. All of the specimens were found from 10 to 50 cm.

Similar to other prehistoric sites found in the project area, site 31HT708* appears to suffer from soil disturbance, probably due to military activity and/or farming and logging activities. These soils are classified as Gilead sands and normally exhibit an Ap horizon of pale brown (10YR 6/3) sands to a depth of 13 cm below surface and a Bt1 horizon of brownish yellow (10YR 6/6) sands to a depth of 20 cm. This is followed by a Bt2 horizon to 56 cm in depth. Although the test unit contains three strata similar to Gilead sands, the differences in its depth and coloration would suggest that the soils have been mixed, probably during either military and/or logging or farming operations.

It seems unlikely that this site exhibits either the data sets or the integrity to provide meaningful information regarding significant research topics (Townsend et al. 1993:32). The information the site can provide, primarily on Sandhills settlement and association with environmental zones, has been recovered through the current survey. Consequently, we recommend 31HT708* as not eligible for inclusion on the National Register of Historic Places. No further management activities are necessary.

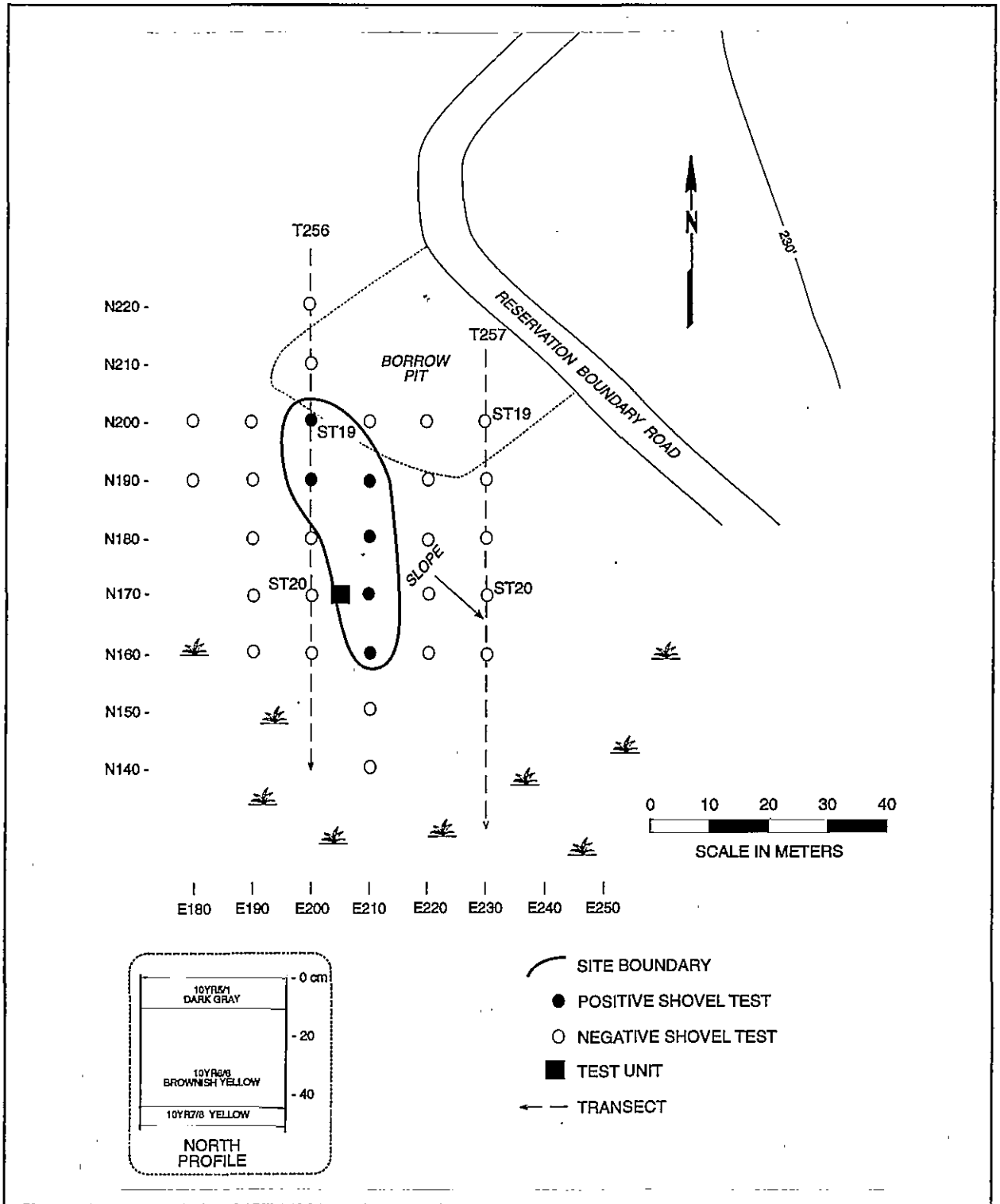

Figure 41. Map of site 31HT708* and test unit profile.

31HT710*/**

Site 31HT710** is a multicomponent prehistoric lithic/historic scatter located 25 m west of Garland Almond Road and about 510 m north of the intersection of Garland Almond Road and Scotchman Road. The central UTM coordinates are N3999320 E675300. The site elevation is 105 m AMSL (Figure 42).

The site is situated on a ridge slope which gently slopes 160 m to the north towards a drainage of Muddy Creek. Vegetation at the site consists of planted pine with a slight scrub oak understory resulting in about 50% surface visibility. The site yielded a total of 44 artifacts.

Site 31HT710*/** was initially discovered during routine shovel testing from surface finds at ST13 on T283. Although no artifacts were recovered from this shovel test, the presence of a field stone chimney base indicated the presence of a historic domestic site. An additional 30 shovel tests were excavated at 10 m intervals in cardinal directions from the initial positive surface find. Six of these, or 20%, yielded artifacts. One fragment of clear glass was recovered from N190E220. One nail was recovered from N190E230. Two fragments of clear glass were recovered from N190E240. One fragment of clear glass and one nail were recovered from N200E210. One fragment of clear glass and one unidentified metal fragment were recovered from N200E220 and five fragments of clear glass, four fragments of brown bottle glass, eight nails, 11 can fragments, and five brick fragments were recovered from N210E220.

A general surface collection, conducted during subsurface testing, yielded one artifact. A Morrow Mountain II projectile point (Coe 1964:37, 43), measuring 50.64 mm in length, 28.12 mm in width, and 7.38 mm in thickness, was collected from 15 m west of ST13. An articulated fieldstone chimney base and brick scatter was observed in the northeastern portion of the site. The site was found to cover an area about 35 m north-south by 50 m east-west, or 1,750 m².

A 50 cm test unit was centrally located and excavated to a depth of 50 cm. Two fragments of clear glass were recovered from the 0-10 cm level. The soil profile of the test unit revealed a very dark grayish brown (10YR 3/2) sand to 20 cm overlaying 20 cm of yellow (10YR 7/8) sand. This is followed by 10 cm of brownish yellow (10YR 6/8) sand. These soils are classified as Gilead sands.

The artifacts recovered during testing indicate the presence of a multi-component prehistoric and historic site. The prehistoric component dates to the Middle Archaic Period. The extant chimney base and recovered historic artifacts suggest the presence of a domestic site originating sometime in the late nineteenth or early twentieth century. This collection is similar to that found at other dispersed farmsteads at Fort Bragg (Trinkley et al.1996c:105-107). Clearly such sites as 31HT710*/** are important since they have the potential to yield information concerning the presence of dispersed historic home sites in the Fort Bragg area.

Similar to other sites found in the project area, site 31HT710*/** appears to suffer from soil disturbance, probably due to military activity and/or farming and logging activities. These soils are classified as Gilead sands and normally exhibit an Ap horizon of pale brown (10YR 6/3) sands to a depth of 13 cm below surface and a Bt1 horizon of brownish yellow (10YR 6/6) sands to a depth of 20 cm. This is followed by a Bt2 horizon to 56 cm in depth. Although the test unit contains three strata similar to Gilead sands, the differences in its depth and coloration suggest that the soils have been mixed, probably during either military and/or logging or farming operations. The use of foundation stones or brick for support of many turn of the century structures (see Trinkley et al. 1996c:72) would decrease the chances of any subsurface features being present. No privy or well depressions were located at this site.

It is probable that these remains are those of a dispersed farmstead. Although the exploration of historic settlement in the Fort Bragg area should be a priority, this site does not appear to possess either the data sets, or integrity, necessary to address these issues (Townsend et al. 1993:32). The information the site can provide, primarily on

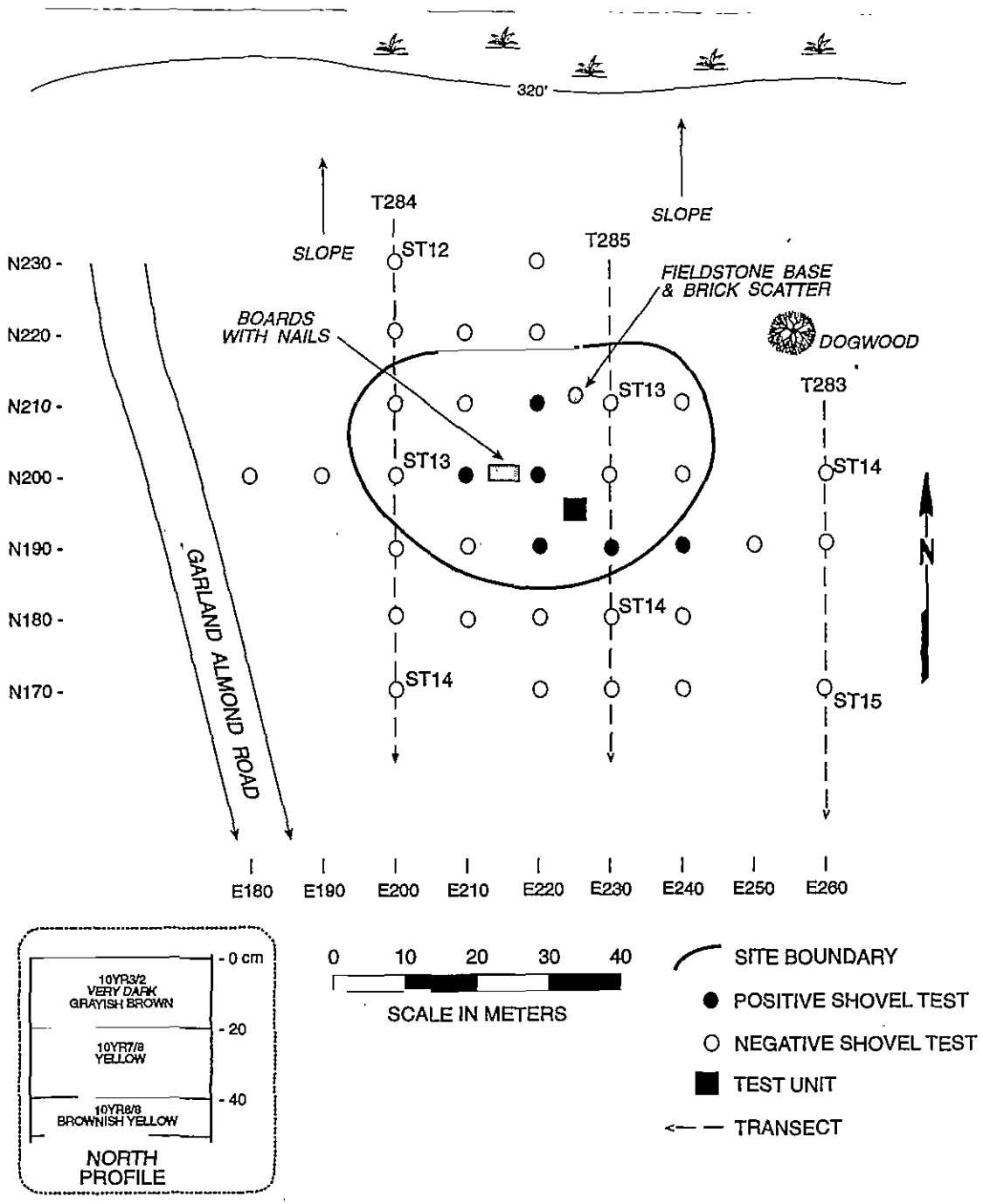

Figure 42. Map of site 31HT710*/** and test unit profile.

Sandhills settlement patterns and association with environmental zone, has been recovered through the current survey. Consequently, site 31HT710** is recommended as not eligible for inclusion on the National Register of Historic Places.

31HT712*

Site 31HT712* is a prehistoric lithic scatter located 10 m south of Fort Bragg Fire Break Road 3 and 730 m northeast of the intersection of McRae Ride and Garland Almond Roads. The central UTM coordinates are N3900200 E676120. The site elevation is 88 m AMSL (Figure 43). The soils in the site area are identified as Candor sands.

The site is situated on a ridge nose with a drainage of Muddy Creek located 120 m to the north. Vegetation at this site consists of planted pine and oak with a scrub oak understory. Two metavolcanic flakes were recovered during subsurface testing from ST1 on T309. Seven additional shovel tests were excavated in cardinal directions. One, N190E200, yielded two additional metavolcanic flakes. The remainder were all were negative. The site dimensions are about 20 m north-south by about 10 meters east-west.

A 50 cm. test unit was placed at N200E200 and excavated to 50 cm. in depth. No artifacts were encountered in the unit, although it did reveal a profile for the site. An A horizon of dark brown (10YR3/3) sands about 18 cm in depth were found overlying brownish yellow (10YR6/8) sands. This profile suggests deposition of soils, since the Candor sands rarely have an A horizon of more than 8 cm.

Nevertheless, the site exhibits a data set that consists only of flakes and the quantity of materials is very low. It is unlikely that these remains have the potential to address substantive research questions. Consequently, we recommend the site as not eligible for inclusion on the National Register of Historic Places.

31HT714*

Site 31HT714* is a prehistoric lithic and pottery surface and subsurface scatter located 50 m north of Scotchman Road and 1,290 east of the intersection of Garland Almond Road and Scotchman Road. The central UTM coordinates are N3899900 E677020. The site elevation is 78 m AMSL (Figure 44).

The site is situated on a ridge, sloping 150 m north to the southern branch of Muddy Creek. Vegetation at the site consists of planted pine and hardwoods with a scrub oak understory resulting in about 25% surface visibility. The site yielded a total of seven artifacts. Site 31HT714* was initially discovered during routine shovel testing from surface finds at ST17 on T242. One quartz flake, and three sherds (17.95 g) were collected from the surface. An additional 12 shovel tests were excavated at 10 m intervals in cardinal directions from the initial positive shovel test. One, or 8%, yielded artifacts. Two metavolcanic flakes were recovered from N220E200.

A general surface collection was conducted during subsurface testing. One additional artifact, a Badin Fabric Impressed sherd (20.65 g) (Coe 1964:28-29), was collected from the site. The site incorporates an area measuring about 20 m north-south by 20 m east-west, for a total of approximately 400 m².

A 50 cm test unit was centrally located and excavated to a depth of 50 cm. No artifacts were recovered from the test unit. The soil profile of the test unit was grayish brown (10YR 5/2) sands to a depth of 5 cm overlaying 45 cm of yellowish brown (10YR 5/8) sand. These soils are classified as Blaney sands.

The Badin sherd dates the site to the Early Woodland. No other diagnostic artifacts were encountered during close interval testing. Although one of the 18 shovel tests produced artifacts, the remaining data sets are limited to debitage and undiagnostic pottery. No evidence was encountered of features. All of the specimens were found from 10 to 50 cm.

Similar to other prehistoric sites found in the project area, site 31HT714* appears to suffer from soil disturbance, probably due to military

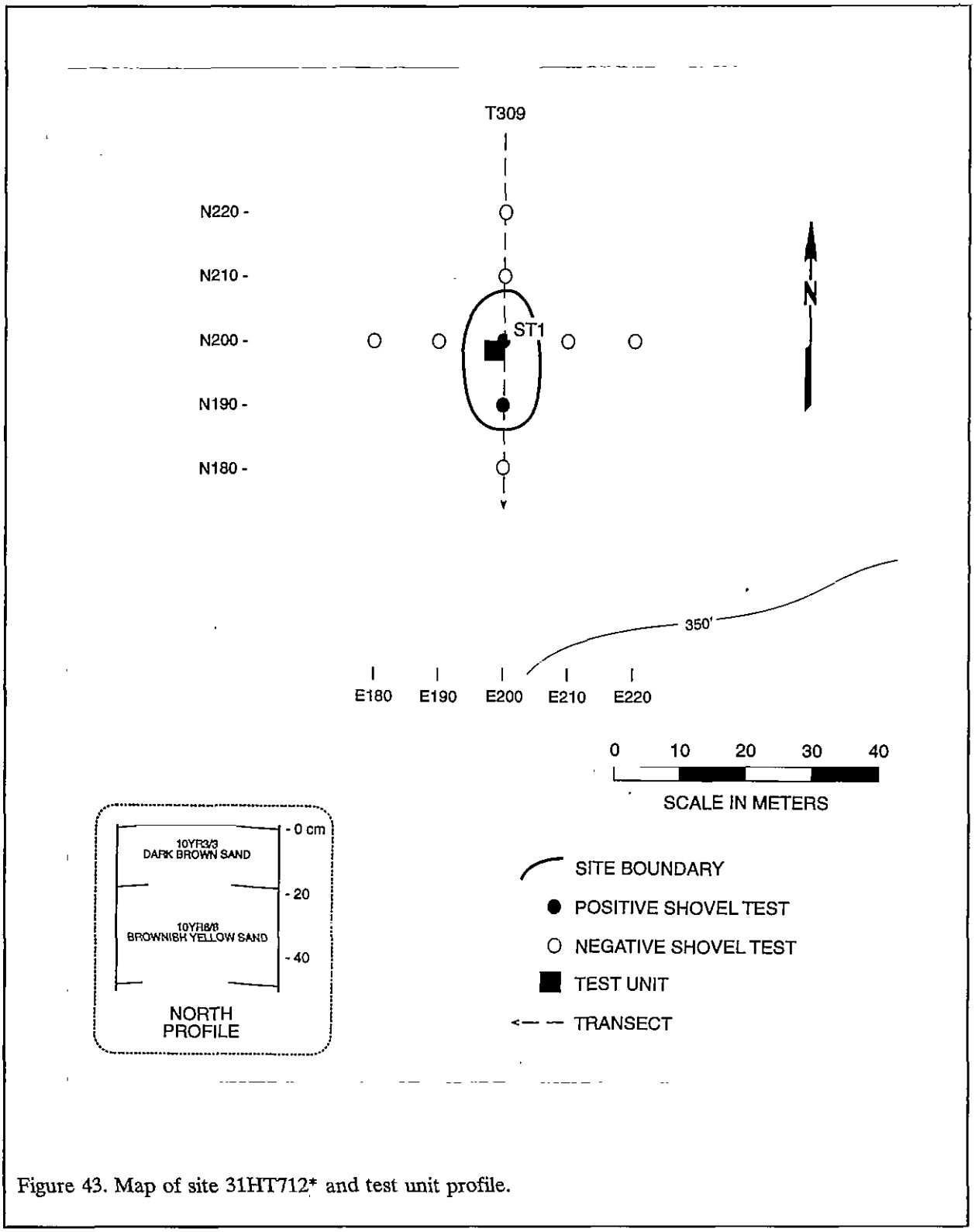

Figure 43. Map of site 31HT712* and test unit profile.

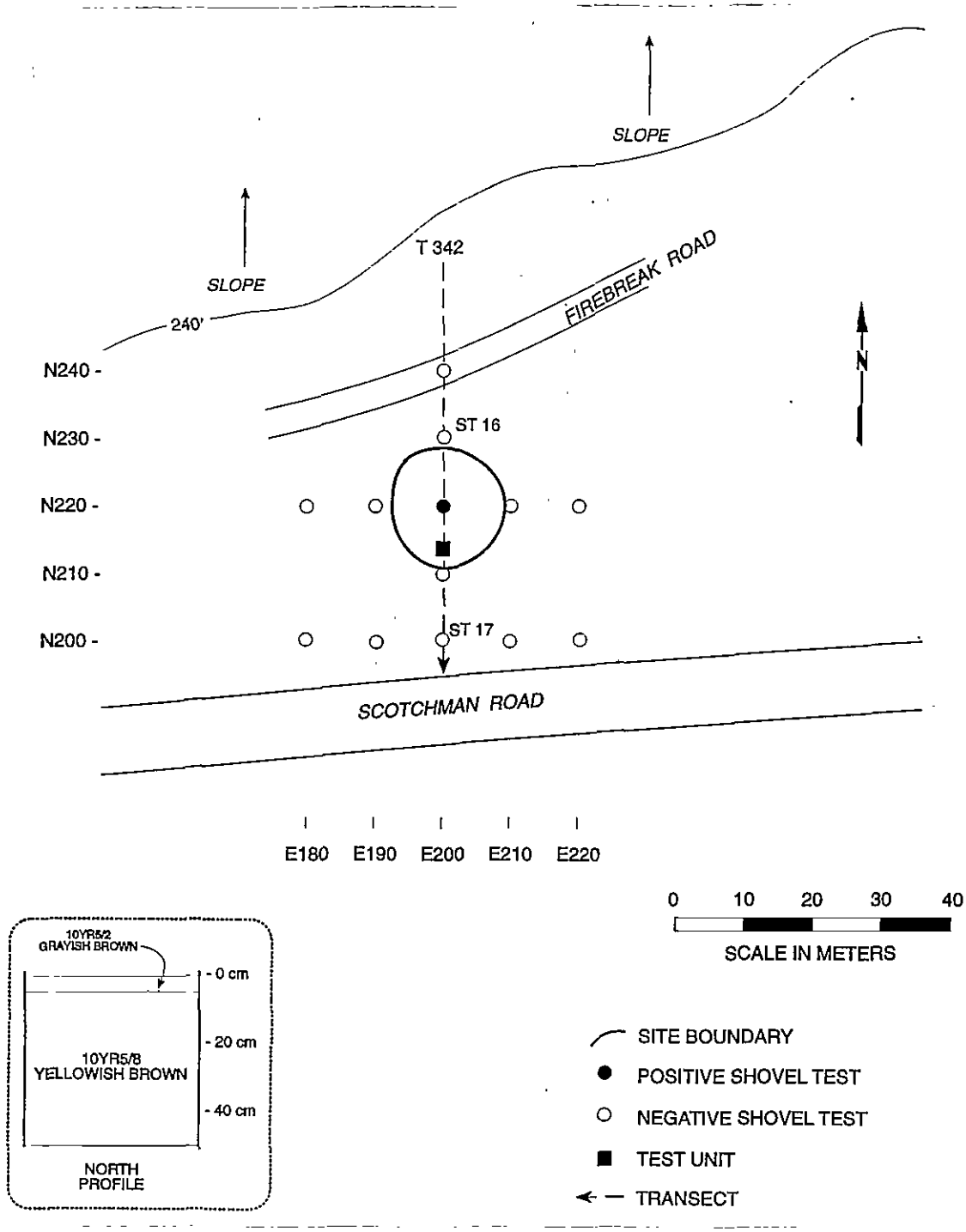

Figure 44. Map of site 31HT714* and test unit profile.

activity and/or farming and logging activities. These soils are classified as Gilead sands and normally exhibit an A horizon of pale brown (10YR 6/3) sands to a depth of 13 cm below surface and a Bt1 horizon of brownish yellow (10YR 6/6) sands to a depth of 20 cm. This is followed by a Bt2 horizon of brownish yellow (7.5YR 6/6) sand. The test unit contains only two strata to a depth of 50 cm whereas the typical Gilead profile contains a third horizon between 20 and 56 cm in depth. This difference suggests that the soils have been mixed, probably during either logging or farming operations.

This site does not exhibit either the data sets or the integrity to provide meaningful information regarding significant research topics (Townsend et al. 1993:32). The information the site can provide, primarily on Sandhills settlement and association with environmental zones, has been recovered through the current survey. Consequently, we recommend 31HT714* as not eligible for inclusion on the National Register of Historic Places. No further management activities are necessary.

31HT717**

Site 31HT717** is a historic surface and subsurface scatter located 180 m north of Fort Bragg Fire Break 2 and about 900 m northwest of the intersection of Scotchman Road and Fort Bragg Fire Break 2. The central UTM coordinates are N3901960 E677620. The site elevation is 101 m AMSL (Figure 45).

The site is situated on a terrace which gently slopes to the north, west, and south. A spring fed lake is located 352 m southwest of the site. Vegetation at the site consists of planted pine with a scrub oak understory which provided limited surface visibility. The site yielded a total of 53 artifacts. The site was initially located during routine shovel testing (ST13 on T63) which yielded one clear glass fragment, four nail fragments, and two unidentified brass fragments. An additional 38 shovel tests were excavated at 10 m intervals on a north-south by east-west cruciform pattern from the original positive shovel test. Of these 9, or 24%, yielded a total of 46 artifacts (Table 8).

Table 8.
Artifacts Recovered from Shovel Testing at 31HT717**

Unit	Number	Type
N170E200	2	nail fragments
N180E190	1	WW, undecorated
	4	clear glass
	1	unidentified brass object
N180E200	1	WW, undecorated
	1	Stoneware, gray saltglazed
	2	clear glass
	1	manganese glass
N190E200	2	aqua glass
	6	nail fragments
N190E210	2	clear glass
	1	manganese glass
	1	aqua glass
N200E200	1	clear glass
	2	unidentified brass fragments
	4	nail fragments
N200E210	2	WW, undecorated
	1	Stoneware, bristol glaze
N210E190	3	nail fragments
	1	spike fragment
N210E200	1	Porcelain, white
	1	clear glass
	1	nail fragment
N210E210	1	nail fragment

A general surface collection, conducted during subsurface testing, yielded no additional artifacts. A large pile of natural stone shoved against the base of a mature pine was, however, observed on the surface in the central portion of the site. The site dimensions are 60 m north-south by 40 m east-west, or approximately 2,400 m².

A 50 cm test unit was centrally located and excavated to a depth of 25 cm. A total of 10 artifacts were recovered from this unit. Two nails were recovered from the 0 to 10 cm level. One nail and one spike were recovered from the 10 to 20 cm level. A feature, approximately 10 cm wide, 37 cm long, and 5 cm in depth, was located at the 20 to 25 cm level. Suspected of being an intrusive field latrine because of the heavy smell of ammonia, this feature yielded a total of six artifacts. These included one clear glass fragment, three nail fragments, and two unidentified metal fragments. No other artifacts were recovered from this level. The soil profile of the test unit revealed

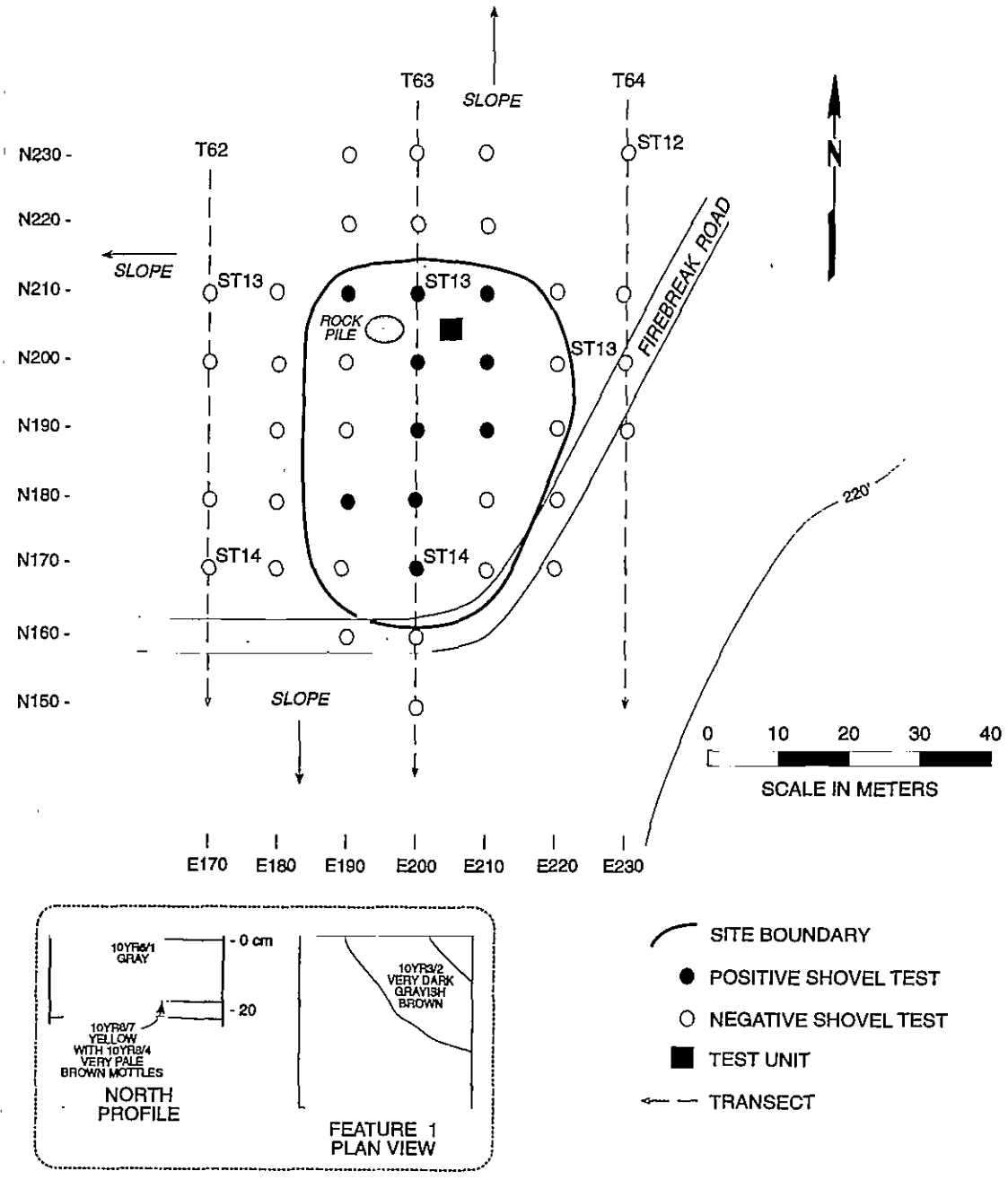

Figure 45. Map of site 31HT717** and test unit plan and profile.

a gray (10YR 6/1) sand to a depth of 18 cm overlaying 7 cm of a yellow (10YR 6/7) sand with very pale brown (10YR 8/4) mottles. These soils are classified as Blaney loamy sands.

The artifacts recovered during testing indicate the presence of a domestic site originating sometime in the late nineteenth or early twentieth century. This collection is similar to that found at other dispersed farmsteads at Fort Bragg (Trinkley et al. 1996c:105-107). Clearly such sites as 31HT717** are important since they have the potential to yield information concerning the presence of dispersed historic home sites in the Fort Bragg area.

Unfortunately, similar to other sites in the project area, 31HT717** has been heavily impacted by either military activity, logging and/or farming operations and neglect. Blaney loamy sands normally exhibit an A horizon of grayish brown (10YR 5/2) sands to a depth of 23 cm. This would indicate that, through deflation, about 5 cm of topsoil has been removed. Although above ground features were encountered, the loss of soil coupled with the very modest artifact collection suggests that very few material remains still exist. The use of foundation stones or brick for support of many turn of the century structures (see Trinkley et al. 1996c:72) would decrease the chances of any subsurface features being present. No privy or well depressions were located at this site.

In spite of the importance of the research questions appropriate for dispersed farmsteads, this particular site does not appear to possess either the data sets, or integrity, necessary to address these issues (Townsend et al. 1993:32). The information the site can provide, primarily on Sandhills settlement patterns and association with environmental zone, has been recovered through the current survey. Consequently, site 31HT717** is recommended as not eligible for inclusion on the National Register of Historic Places.

Isolated Occurrences

These investigations produced a small number of what are termed "isolated occurrences," or materials recovered from single shovel tests on transect surveys. According to the scope of work five or less artifacts is considered an isolated occurrence, whereas six or more would elevate the find to a site. In each case the initial finding was treated as a site and consequently, for each isolated occurrence there was an initial positive shovel test and a minimum of two additional shovel tests were excavated off the positive shovel test in cardinal directions. Had additional cultural materials been found, these occurrences would have been elevated to sites. Since no further material was found, they remain as isolated finds.

Detailed individual site maps are not provided, since in every case such maps would be of no assistance in re-locating the site, establishing its boundaries, or understanding its setting. We have provided small scale sketch maps, however, to help the reader better understand the testing methodology (Figures 46-49).

All of these isolated occurrences, by definition, are normally considered not eligible for inclusion on the National Register of Historic Places by the State Historic Preservation Office and we are in concurrence with this assessment for each site.

31HT684*

Site 31HT684* is a prehistoric lithic subsurface scatter located 270 m south of Madison Briar Road approximately 850 m east of the intersection of McRae Ride Road and Madison Briar Road. The central UTM coordinates are N3901200 E674900. The site elevation is 91 m AMSL (Figure 46).

The site is situated on a terrace nose which gently slopes 75 m to the south towards a drainage of Muddy Creek. Vegetation at the site consists of planted pine with a dense hardwood understory which provided limited surface visibility. Two chert flakes were recovered from shovel Test 9 on Quality Control Transect 8.5. Eight additional shovel tests were conducted on a north-south by east-west cruciform pattern. All were negative.

31HT689*

Site 31HT689* is a prehistoric lithic subsurface scatter located approximately 80 m west of the abandoned railroad bed of the Seaboard Coast Line Railroad and approximately 800 m south of North Carolina Highway 87. The central UTM coordinates are N3903000 E677410. The site elevation is 102 m AMSL (Figure 46).

The site is situated on a terrace ridge which gently slopes 240 m to the east towards a drainage of Muddy Creek. Vegetation at the site consists of planted pine with a dense hardwood understory which provided limited surface visibility. Two metavolcanic flakes were recovered during subsurface testing from ST18 on T93. Eight additional shovel tests were conducted on a north-south by east-west cruciform pattern. All remaining shovel tests were negative.

31HT693*

Site 31HT693* is a prehistoric lithic subsurface scatter located approximately 23 m east of the intersection of Scotchman Road and an unnamed fire break road and approximately 7 m north of the fire break road. The central UTM coordinates are N3901420 E677340. The site elevation is 102 m AMSL (Figure 46).

The site is situated on a ridge top which gently slopes 140 m to the southeast towards a drainage of Muddy Creek. Vegetation at the site consists of planted pine with a dense hardwood understory which provided limited surface visibility. Two metavolcanic flakes were recovered during subsurface testing from ST1 on T224. Eight additional shovel tests were conducted on a north-south by east-west cruciform pattern. All remaining shovel tests were negative.

31HT698**

Site 31HT698** is an historic isolated find located 1,020 m southeast of the intersection of Madison Briar Road and Scotchman Road, 240 meters south of the intersection of Fire Break Road 2 and the abandoned railroad bed. The central UTM coordinates are N3901980 E677920. The site elevation is 98 m AMSL (Figure 46).

The site is situated on a 10% ridge slope to a drainage 170 m to the east. Vegetation at this site consists of mixed planted pine with oak and scrub oak understory. One undecorated whiteware ceramic was recovered during subsurface testing from ST9 on T247. All other shovel tests were negative.

31HT701*

Site 31HT701* is a prehistoric lithic scatter located 800 m south of the intersection of the abandoned railroad bed of the Seaboard Coast Line and Fort Bragg Fire Break road 2 and 1,400 m southeast of the intersection of Madison Briar Road and Scotchman Road. The central UTM coordinates are N3901525 E677975. The site elevation is 91 m AMSL (Figure 47).

The site is situated on a 10% ridge slope to the southwest. A drainage of Muddy Creek is located 50 m to the southwest. Vegetation at this site consists of mixed planted pine with oak and scrub oak understory. One metavolcanic flake was recovered during subsurface testing from ST24 on T247. Eight additional shovel tests were excavated in cardinal directions and all were negative.

31HT702*

Site 31HT702* is a prehistoric lithic scatter located 900 m south of the intersection of the abandoned railroad bed of the Seaboard Coast Line and Fort Bragg Fire Break Road 2 and 1,500 m southeast of the intersection of Madison Briar Road and Scotchman Road. The central UTM coordinates are N3901400 E677950. The site elevation is 88 m AMSL (Figure 47).

The site is situated on a 15% ridge slope to the south. A drainage of Muddy Creek is located 200 m to the south. Vegetation at this site consists of mixed planted pine with oak and scrub oak understory. Five quartz flakes were recovered during subsurface testing from ST28 on T247. Eight additional shovel tests were excavated in cardinal directions and all were negative.

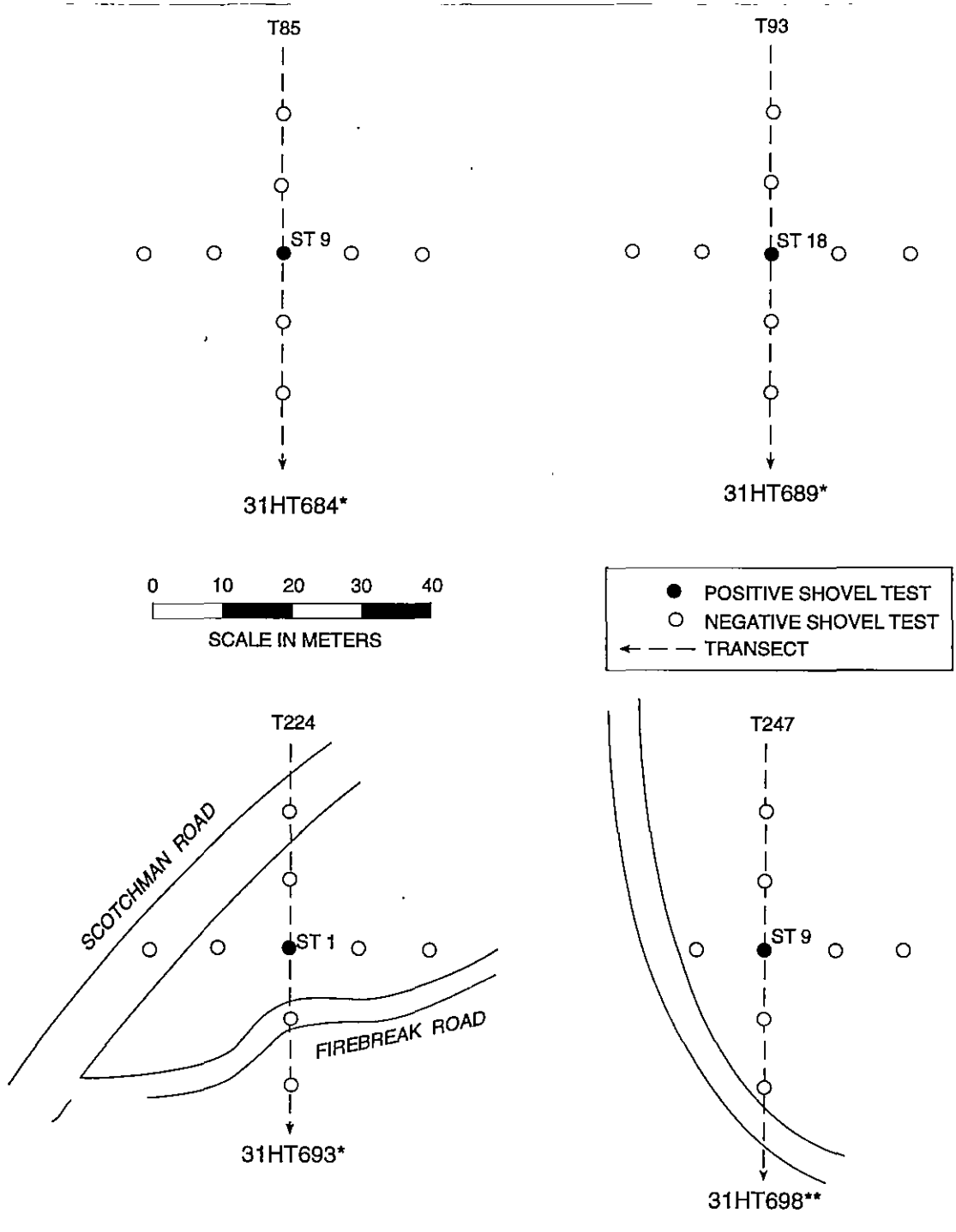

Figure 46. Isolated occurrences at 31HT684*, 31HT689*, 31HT693*, and 31HT698**.

31HT704*

Site 31HT704* is a prehistoric lithic scatter located 800 m south of the intersection of the abandoned railroad bed of the Seaboard Coast Line and Fort Bragg Fire Break Road 2 and 1,460 m southeast of the intersection of Madison Briar Road and Scotchman Road. The central UTM coordinates are N3901500 E677980. The site elevation is 95 m AMSL (Figure 47).

The site is situated on a 10% ridge slope to the southwest. A drainage of Muddy Creek is located 90 m to the southwest. Vegetation at this site consists of mixed planted pine with oak and scrub oak understory. One metavolcanic flake was recovered during subsurface testing from ST26 on T248. Eight additional shovel tests were excavated in cardinal directions and all were negative.

31HT705*

Site 31HT705* is a prehistoric lithic scatter located 990 m south of the intersection of the abandoned railroad bed of the Seaboard Coast Line and Fort Bragg Fire Break Road 2 and 5,000 m southeast of the intersection of Madison Briar Road and Scotchman Road. The central UTM coordinates are N3901300 E678040. The site elevation is 88 m AMSL (Figure 47).

The site is situated on a swamp margin ridge toe which slopes 5% to the southwest. A drainage of Muddy Creek is located 50 m to the north. Vegetation at this site consists of mixed planted pine with oak and scrub oak understory. Three quartz flakes were recovered during subsurface testing from ST21 on T249. Eight additional shovel tests were excavated in cardinal directions and all were negative.

31HT706*

Site 31HT706* is a prehistoric lithic scatter located 750 m south of the intersection of the abandoned railroad bed of the Seaboard Coast Line and Fort Bragg Fire Break Road 2 and 1,350 m southeast of the intersection of Madison Briar Road and Scotchman Road. The central UTM coordinates are N3901550 E678025. The site elevation is 98 m AMSL (Figure 47).

The site is situated on a ridge slope which slopes 5% to the southwest. A drainage of Muddy Creek is located 150 m to the south. Vegetation at this site consists of mixed planted pine with oak and scrub oak understory. Two metavolcanic flakes were recovered during subsurface testing from ST26 on T249. Eight additional shovel tests were excavated in cardinal directions and all were negative.

31HT709*

Site 31HT709* is a prehistoric lithic scatter dating from the Late Woodland located 1,200 m south of the intersection of the abandoned railroad bed of the Seaboard Coast Line and Fort Bragg Fire Break Road 2 and 120 m east of the abandoned railroad bed of the Seaboard Coast Line. The central UTM coordinates are N3901240 E678350. The site elevation is 78 m AMSL (Figure 48).

The site is situated on a hummock which is bordered to the north, east, and south by drainages. A drainage of Muddy Creek is located 90 m to the east. Vegetation at this site consists of planted pine with a scrub oak understory. One metavolcanic flake, one quartz biface, and one quartz Clarksville Small Triangular projectile point (Coe 1964:112), measuring 16.34 mm in length, 16.08 mm in width, and 3.45 mm in thickness, were recovered during subsurface testing from ST20 on T259. Six additional shovel tests were excavated in cardinal directions and all were negative.

31HT711*

Site 31HT711* is a prehistoric lithic scatter located 40 m south of the Fort Bragg Fire Break Road 3 and 700 m northeast of the intersection of McRae Ride and Garland Almond Roads. The central UTM coordinates are N3900140 E676120. The site elevation is 90 m AMSL (Figure 48).

The site is situated on a ridge nose which is boarded to the north by a small drainage. A drainage of Muddy Creek is located 180 m to the

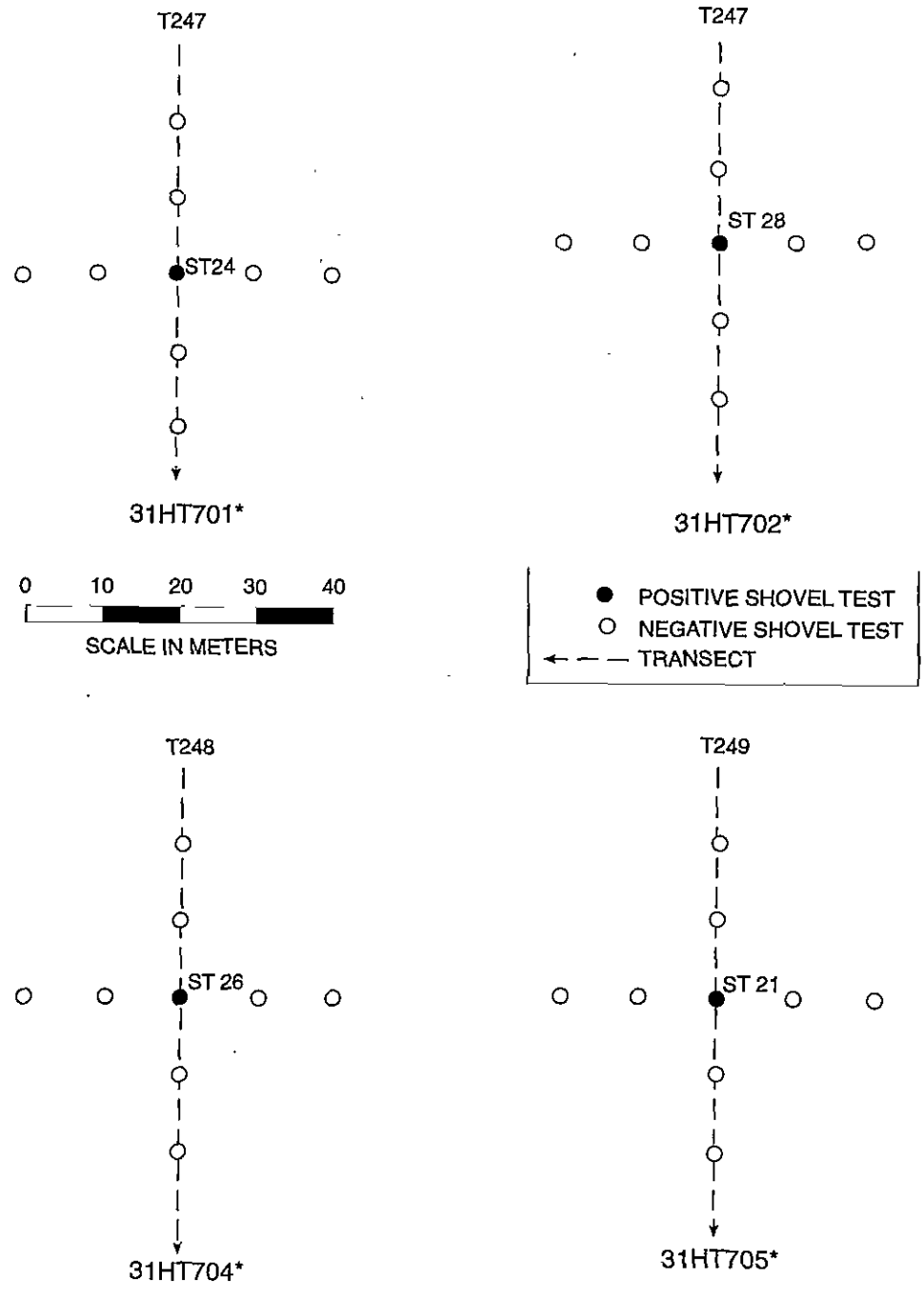

Figure 47. Isolated occurrences at 31HT701*, 31HT702*, 31HT704*, and 31HT705*.

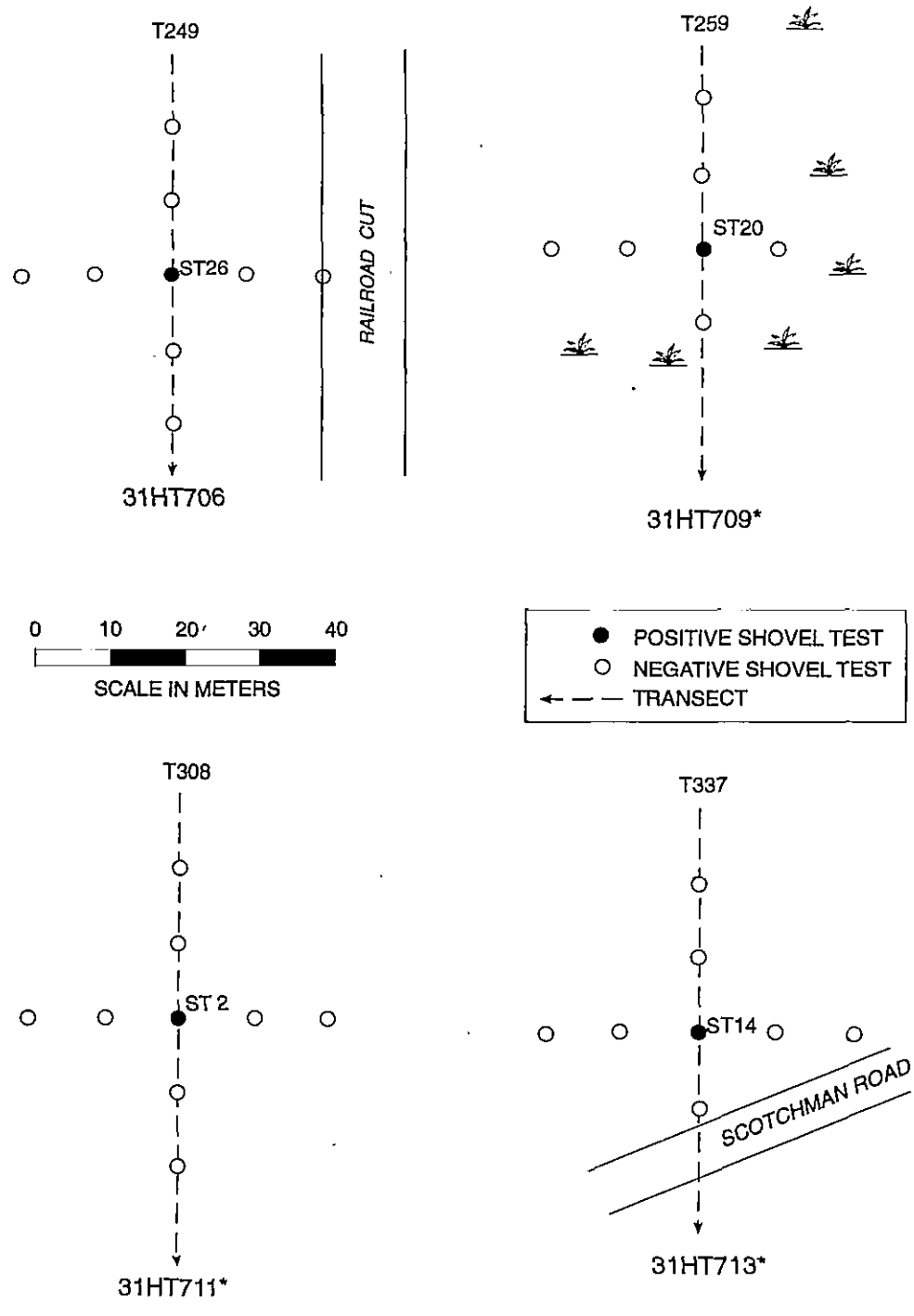

Figure 48. Isolated occurrences at 31HT706*, 31HT709*, 31HT711*, and 31HT713*.

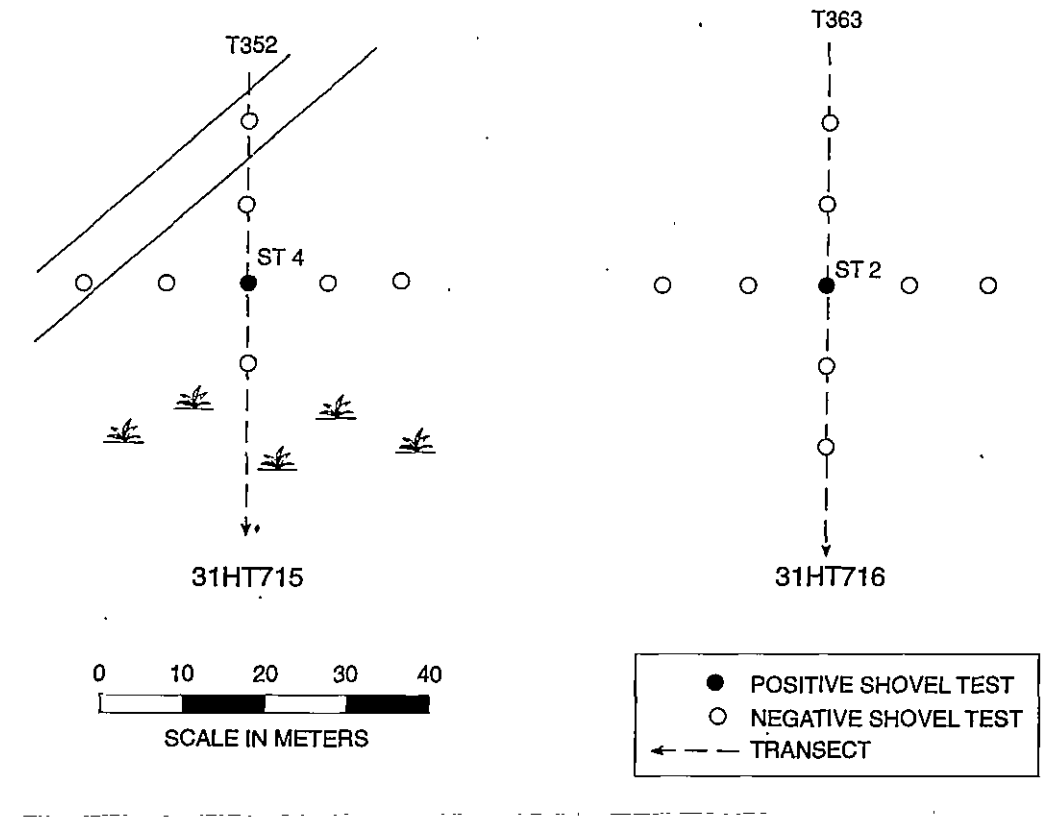

Figure 49. Isolated occurrences at 31HT715* and 31HT716*.

north. Vegetation at this site consists of planted pine and oak with a scrub oak understory. Four metavolcanic flakes were recovered during subsurface testing from ST2 on T308. Eight additional shovel tests were excavated in cardinal directions and all were negative.

31HT713*

Site 31HT713* is a prehistoric lithic scatter located 60 m north of Scotchman Road and 1,650 m north of the intersection of McRae Ride and Garland Almond Roads. The central UTM coordinates are N3899860 E676960. The site elevation is 79 m AMSL (Figure 48).

The site is situated on a 2% ridge slope. A drainage of Muddy Creek is located 75 m to the north. Vegetation at this site consists of planted pine and oak with a scrub oak understory. Two quartz flakes were recovered during subsurface testing from ST14 on T337. Seven additional shovel tests were excavated in cardinal directions and all were negative.

31HT715*

Site 31HT715* is a prehistoric scatter located 210 m east of Scotchman Road and 750 m south of the intersection of Scotchman Road and Fort Bragg Fire Break Road 2. The central UTM coordinates are N3901300 E677490. The site elevation is 102 m AMSL (Figure 49).

The site is situated on a 5% ridge slope. A drainage of Muddy Creek is located 300 m to the east. Vegetation at this site consists of planted pine with a scrub oak understory. Two small

unidentified sherds (7.87 g) were recovered during subsurface testing from ST4 on T362, dating the scatter to the Woodland Period. Seven additional shovel tests were excavated in cardinal directions and all were negative.

31HT716*

Site 31HT716* is a prehistoric lithic scatter located 240 m east of Scotchman road and 840 m south of the intersection of Scotchman Road and Fort Bragg Fire Break Road 2. The central UTM coordinates are N3901400 E677480. The site elevation is 95 m AMSL (Figure 49).

The site is situated on a 5% ridge slope. A drainage of Muddy Creek is located 360 m to the east. Vegetation at this site consists of planted pine with a scrub oak understory. One quartz flake was recovered during subsurface testing from ST4 on T362. Seven additional shovel tests were excavated in cardinal directions and all were negative.

CONCLUSIONS

Introduction

As a result of the intensive survey of the 942.63 ha Northern Training Area IV survey tract 34 archaeological sites and occurrences were recorded and one previously recorded site was revisited. Of the 35 identified sites, 14 were isolated occurrences. Table 9 lists the identified sites. Of the resources recovered, two sites, 31HT690* and 31HT691**, are recommended as potentially eligible for inclusion on the National Register of Historic Places. None of the other 33 are recommended as eligible for inclusion on the National Register of Historic Places.

The Department of the Army concurred with these recommendations, with two exceptions. In a letter from Colonel Robert L. Shirron, Director of Public Works at Fort Bragg, dated March 31, 1998 the post felt that 31HT691** was ineligible, while 31HT123** was recommended eligible. In contrast, the North Carolina State Historic Preservation Officer concurred that 31HT690* and 31HT691** were both eligible for inclusion on the National Register of Historic Places, while 31HT123** was found not eligible (letter from Mr. David Brook, Deputy State Historic Preservation Officer to Colonel Robert L. Shirron dated March 19, 1998).

The Northern Training Area IV survey tract, which was heavily forested with poor surface visibility, yielded a site density of 3.71 sites per km² when both sites and isolated occurrences are considered. The site density declines to 2.23 sites per km² if the isolated occurrences are discounted.

Over the past two years Chicora Foundation has explored 3,475.79 ha or 35 km² on six different tracts (Trinkley et al. 1997, 1996a, 1996b, 1996c, 1996d, and this current study). Although this represents only 5.8% of the total Fort Bragg installation (of ca. 60,000 ha) and while the survey tracts do not represent strictly random parcels incorporating a cross section of the Fort Bragg topography and environmental zones, the survey methodology has been consistent and has been consistently reviewed.. The studies have been conducted under only two different field directors and all of the work has used essentially identical methodologies for site identification. In other words, while the

Table 9.
Sites in the Northern Training Area IV Survey Tract

Site #	Current Status	Site #	Current Status
31HT123**	NE	31HT701*	NE - occurrence only
31HT684*	NE - occurrence only	31HT702*	NE - occurrence only
31HT685*	NE	31HT703*	NE
31HT686*	NE	31HT704*	NE - occurrence only
31HT687*/**	NE	31HT705*	NE - occurrence only
31HT688*	NE	31HT706*	NE - occurrence only
31HT689*	NE - occurrence only	31HT707*	NE
31HT690*	PE	31HT708*	NE
31HT691**	PE	31HT709*	NE - occurrence only
31HT692*	NE	31HT710*/**	NE
31HT693*	NE - occurrence only	31HT711*	NE - occurrence only
31HT694*	NE	31HT712*	NE
31HT695*	NE	31HT713*	NE - occurrence only
31HT696*	NE	31HT714*	NE
31HT697**	NE	31HT715*	NE - occurrence only
31HT698**	NE - occurrence only	31HT716*	NE - occurrence only
31HT699*	NE	31HT717**	NE
31HT700*	NE		

PE = potentially eligible, NE = not eligible

sample is small and we cannot represent it as statistically valid, the data have nevertheless been carefully collected. It is therefore appropriate to explore what these data may be able to tell us about site density at Fort Bragg. Table 10 provides an overview of the different tracts.

When both sites and isolated occurrences are considered, we find that the site density ranges from a low of about 3.2 to 3.3 sites per km² (found on two different surveys) to a high of 22.4 sites per km² (found on only one survey tract). The standard deviation is 6.9 sites and the mean of the different surveys is 7.4 sites per km² (although if all of the surveys were combined, the mean would be slightly higher — 7.7 sites per km²).

Table 10.
Site Density from Chicora Surveys on Fort Bragg

Project	Ha	Km²	Sites	Sites/km²	Isos	Combined Sites/km²
Sicily DZ	557.5	5.6	40	7.2	85	22.4
Camp Mackall DZ	230.0	2.3	14	6.1	4	8.3
Manchester Road	70.0	0.7	2	2.9	1	4.3
Camp Mackall SF	29.6	0.3	1	3.3	-	3.3
Ft. Bragg General	776.6	7.8	10	1.3	15	3.2
Holland DZ	625.7	6.3	12	1.9	31	6.8
NTA IV	942.6	9.4	21	2.2	14	3.7
Combined Totals	3232.0	32.4	100	3.2	150	7.7

Standard Deviation on Combined Sites/km² - 6.9
Mean Combined Sites/km² - 7.4

In comparison, Loftfield (1979) projected an average density of 10 sites per km² while Abbott et al. (1995:35) suggested a density of 11.3 sites per km² . Braley (1989b) found a density of 16.1 sites per km² in the Northern Training Area and Clement et al. (1997), in a survey which encompassed a portion of the Northern Training Area, found an overall density of 8.8 sites per km².

Without reading too much into these data, we believe that they suggest there is considerable variation in the site density in the Fort Bragg area — so much so that it is almost certainly misleading to use any one figure and attempt to represent it as applying to the entire area. We suspect that the density of sites across the Sand Hills is largely dependent on a variety of micro-environmental variables, some of which have been recognized and others of which we are still ignorant.

We have previously suggested that one very significant micro-environmental factor is the presence of broad level areas on ridge side slopes overlooking small, intermittent drainages. These areas were particularly favored, while broad upland areas (which comprise much of the acreage surveyed thus far) were generally avoided (see Trinkley et al. 1996c:116). The work by Clement et al. (1997) also suggests that site density will be affected by proximity to the Lower Little River.

The sites encountered in the current survey contain both prehistoric and historic assemblages. This, however, is not particularly surprising. The 250 sites thus far examined by Chicora's surveys have produced 258 assemblages. Of these, 243 were prehistoric (representing 94.2%), while only 15 sites yielded historic remains (representing 5.8%). This tends to support the historical overview which suggests that the Sand Hills were not densely settled and through time farming became harder and seemingly less profitable. Most of the historic assemblages represent small tenant occupations or perhaps even twentieth century refuse disposal. We have yet to identify a well preserved eighteenth or nineteenth century settlement.

Issues discussed in these conclusions include site attrition, site size and identification, prehistoric land use, site density, lithic resource use, artifacts, and general recommendations.

Site Attrition

Previous studies conducted at Camp Mackall (Trinkley et al. 1996b:102-106) and at Fort Bragg (Trinkley et al. 1997:108-109, Trinkley et al. 1996a:136-139, Trinkley et al. 1996c:117-118) have pointed out the extraordinary attrition of archaeological resources present in the Fort Bragg area. The causes for this attrition have concentrated on human intervention, especially the collection of exposed materials, and the severe erosion that has been seen in the open and desert-like conditions of the Sicily and Camp Mackall drop zones. Work in the wooded areas of Fort Bragg has revealed that the impact of human intervention is not a significant issue, although site erosion continues to be severe throughout the post, even in these wooded and seemingly "preserved" areas (see Trinkley et al. 1996c:118).

The current study continues to confirm these previous observations. The Northern Training Area IV survey tract, although heavily wooded, exhibits a variety of site remnants characterized by, at best, truncated soil profiles. Shovel test logs at virtually all of the survey tracts, including the current study, reveal staggering amounts of soil loss, much of which must have occurred prior to the military's arrival in the early twentieth century.

As found in earlier studies, the single most common factor weighing against the eligibility of archaeological sites continues to be the lack of site integrity, attributable to soil loss or erosion. This problem is caused by a combination of the nature of the soils, soil loss due to impacts of logging operations within the post boundaries, past cultivation practices, and the nature of the military operations which take place on the posts.

Range in Site Sizes

The five surveys conducted by Chicora Foundation have produced mean site sizes that are spread over a considerable range — from 1,375 m² to 5,486 m² (see Table 11). There appear to be two clusters. The Camp Mackall and Sicily Drop Zones both yielded means around 3,300 to 3,500 m², while the Holland Drop Zone and the current survey of the North Training Area IV produce means of 5,673 m² and 5,486 m² respectively. One the sites from the general survey, with a mean of only 1,375 m², appear to unusual.

Table 11.
Sites Sizes in Fort Bragg Surveys

Project	Range in Size (m²)	Mean Size (m²)	SD
Holland DZ	50 - 26,100	5,673	7,640
Camp Mackall DZ	80 - 21,600	3,287	5,411
Sicily DZ	52 - 37,575	3,497	6,705
General Survey	185 - 3,175	1,375	1,045
NTA IV	200 - 72,900	5,486	15,877

Yet while it is possible to suggest these two clusters, when the range of sizes is examined, one has less confidence in their validity. For example, while both the North Training Area IV and Holland Drop Zone exhibit mean sizes of around 5,500 m², 32% of the sites in the former survey tract are smaller than 1,000 m², while 17% of the sites from the Holland Drop Zone fall into this same category. Likewise, 47% of the Camp Mackall Drop Zone sites are small than 1,000 m², while 58% of the sites in the Sicily Drop Zone were that small. In other words, while these means appear to cluster, there is still considerable diversity from survey tract to survey tract and it is difficult to find consistency.

In the past we have made very strong cases for the drop zones that the cleared conditions allowed for a much more thorough recovery of the entire range of sites, many of which would never have been discovered through traditional shovel testing. The Northern Training Area IV presents us with a slightly different picture — a lower site density, but sites that are, on average, somewhat larger.

The safest conclusion is probably that with only two wooded tracts, totaling only 1,719 ha, it isn't appropriate to make generalizations. The Northern Training Area IV survey tract may be

anomalous or it may reflect thus far unrecognized micro-environmental variables. If we take the two wooded tracts together, we find a range of site sizes from 185 m² to nearly 72,900 m² and a mean of 4,876 m² and a standard deviation of 14,257 m². About 42% of the sites (11 of 26) are less than 1,000 m² in size.

Curiously, Braley's (1989) survey of the Northern Training Area suggests very different results. When the sites from all nine survey blocks are examined, we see a range of site sizes from 25 m² to 22,000 m², with nearly 71% of the sites (76 of 106) reported as measuring less than 1,000 m². They yield a mean site size of 1,488 m², with a standard deviation of 3,406 m². These results, of course, are very close to those of our General Survey tract, although Braley's standard deviation is much larger, reflecting the greater range in site size. Nevertheless, it is clearly at the low end of our results and bears almost no resemblance to the site sizes we encountered in our survey tract on the Northern Training Area.

If we look at Braley's Block 9, adjacent to our current survey area, we find a site size range of 25 m² to 20,000 m², with 73% (11 of 15) sites being under 1,000 m² in extent. At first glance this still does not seem comparable to the current results, since the bulk of our sites were over 1,000 m² and our range was considerably greater than that reported by Braley. This is further supported when Braley's mean site size for Block 9 — 2,112 m² — is computed. The associated deviation, 5,075 m², reflects the variation in size. This is still far different from that found during the Chicora survey.

One reviewer suggests that the reason for this difference may be that our field methods selected against finding small sites, while those used by Braley were more appropriate for identifying small sites. Might this be the case?

Braley (1989:10) explains that his sites were found by both visual inspection and shovel testing. The shovel testing occurred only on "favorable land forms" and was at an interval of 15 to 20 m. This, of course, is a closer interval than mandated by the scope of work prepared by the post archaeologist and the National Park Service under which we operated. The closer interval *may*, in fact, have helped identify smaller sites.

In addition, once a site was found Braley noted that it was tested using "several additional shovel tests," although the exact methodology was not explained (Braley 1989:10). However, when the shovel testing results for Block 9 are examined, no site received more than seven shovel tests and the average number of shovel tests per site was only four. This suggests that Braley's shovel testing strategy itself might have underestimated site size by failing to fully identify site boundaries.

The point, least there be any misunderstanding, is not to criticize Braley's methods, but rather to illustrate that the methods he employed are *not* directly applicable to the current study. The differences in the site densities and site sizes may be the result of different methodologies, of they simply indicate that even adjacent survey tracts can produce sites that vary dramatically in size, perhaps because the sample universe is far from homogeneous.

If the latter explanation is correct, it cautions us against sampling strategies that almost uniformly are predicated on homogeneity and understanding the range in variation that is expected in the population. It seems that the current strategy of surveying large blocks is far more justifiable than earlier efforts to sample in the hope of arriving at some synthetic statement.

Prehistoric Land Use

The ability of this study, in and of itself, to offer detailed observations on prehistoric land use is constrained by the relatively small number of sites encountered and a general lack of diagnostic artifacts. There are five entirely historic sites, leaving 30 sites (including both isolated finds and sites) with 35 components. Nineteen of these (54.2%) are non-diagnostic prehistoric, containing only flakes. Archaic and Woodland assemblages are both equal — each represented by eight components (each representing 22.9% of the total).

Represented in the Archaic assemblages are Hardaway, Kirk, Big Sandy, Morrow Mountain, Guilford, Small Savannah River, and Gypsy, with only the Kirk and Morrow Mountain occurring in more than one assemblage. The Woodland assemblage includes primarily small, undiagnostic sherds, although identifiable Badin ceramics were recovered from two sites, while Yadkin, Hanover, Caraway, and Clarksville materials were found at two sites.

The previous survey tracts have tended to suggest that sites are primarily found on the ridge side slopes overlooking small and intermittent drainages. And as we move up, off the slopes, the number of sites decreases, suggesting that the uplands were rarely used. For example, at the Sicily Drop Zone, only six of the 35 upland loci represented sites (17.1%). The remainder (82.9%) were isolated occurrences. Like the Holland Drop Zone, the sites which are present on the broad upland ridges have low artifact densities. And again, while only 15% of the sites are found in this ecozone, over a third (34.1%) of the isolated occurrences are found here. Based on these data we have suggested that the upland sites may represent special activities, such as butchering sites or perhaps even stations where points were resharpened or rehafted in the midst of the hunt.

Curiously, however, the current survey presents a somewhat different picture. Those sites present in the broad uplands, not closely associated with any drainage, include 31HT684* through 31HT690*, 31HT692* through 31HT694*, 31HT699*, 31HT702*, 31HT706*, 31HT710* through 31HT712*, and 31HT714* through 31HT716*. Of these 11 (57.9%) are sites while the remaining eight (42.1%) are isolated occurrences. One of the 11 sites (31HT710*/**) contains only a single prehistoric artifact and is therefore not considered in these discussions. The remaining 10 sites have artifact densities that range from 1 artifact/17 m² to 1 artifact/120 m², with a mean of 1 artifact/51 m².

When the sites with closer association with ridge slopes and drainages are examined, we still see a rather broad range of artifact densities (1 artifact/14 m² to 1 artifact/100 m²), and the mean (1 artifact/56 m²) is virtually identical. But, only six of the 17 sites and only five of the 13 isolated occurrences are found in the lowlands. The uplands seem to have been preferred.

Table 12 compares the percentage of sites on different slope faces for Sicily, Camp Mackall, Holland, and Northern Training Area surveys. When all of these are combined, it becomes clear that north to southeast facing sites are most common, while there are very few sites facing to the south, southwest or west. Hudson (1984) notes that the prevailing winds in the Fort Bragg area are from the southwest, suggesting that the Native Americans sought to avoid camps facing into the wind, and generally favored camps facing in the opposite direction. Perhaps nowhere is this better illustrated than in the Northern Training Area.

Table 12.
Slope Faces for Site in Survey Tracts on Fort Bragg

Slope Face	% Sicily	% Camp Mackall	% Holland	% NTA IV
N	11.8	9.1	30.0	30.8
NE	8.8	-	10.0	7.7
E	29.4	18.2	40.0	23.1
SE	23.5	18.2	-	15.3
S	2.9	45.4	-	7.7
SW	-	9.1	-	-
W	5.9	-	10.0	7.7
NW	17.6	-	10.0	7.7

Brown and Morgan (1983:24) explain that there are a number of factors to consider when locating a camp site. For instance, southern exposures, such as found in the Camp Mackall area, provide the longest lasting heat and light, while camps on north and east facing slopes, such as those so common in the Northern Training Area IV survey tract, provide not only protection from the winds and blowing rains, but also provide quicker warmth during the morning hours.

It seems likely that while the sites on Fort Bragg are heavily impacted by erosion and

deflation, their most significant contribution to our understanding of past lifeways may be in this area of land use. As the samples increase over the next several years there is a very good chance that archaeologists will be able to offer some detailed discussions on how at least the gross topographic differences affected prehistoric activities.

Site Density and Function

Table 13 provides a list of the archaeological sites, their components, size in m², and the density of artifacts per m² listed in order of size. Sites 31HT687*/** and 31HT710*/** are excluded from this table because of the historic component thus, the inability to calculate only prehistoric site size.

Table 13.
Artifact Density (sites listed by increasing size)

Site	Components	Size (m²)	Density (per m²)
31HT688*	prehistoric	200	0.02
31HT694*	prehistoric	200	0.02
31HT700*	prehistoric	200	0.02
31HT712*	prehistoric	200	0.02
31HT692*	Woodland	300	0.06
31HT714*	Woodland	600	0.02
31HT685*	Early Archaic	400	0.03
31HT703*	prehistoric	400	0.06
31HT695*	prehistoric	700	0.02
31HT708*	Early Archaic-Woodland	800	0.07
	range in density — 0.02 - 0.7		
	mean — 0.03		
	SD — 0.02		
31HT696*	Early Archaic	1,100	0.02
31HT699*	prehistoric	1,375	0.04
31HT686*	Late Archaic-Woodland	1,925	0.03
31HT707*	Woodland	2,700	0.01
31HT690*	Early Archaic-Woodland	72,900	0.02
	range in density — 0.01 - 0.04		
	mean — 0.02		
	SD — 0.01		

Sassaman et al. (1990) suggest that the density of artifacts at prehistoric sites is a useful measure of the relative intensity of material discard at a site. Sassaman and his colleagues also state that the amount of discard is assumed to be proportional to the "cumulative duration of site occupation, and/or the total number of site occupants, and/or the intensity of activities from which discarded debris was generated" (Sassaman et al. 1990:223). Lithic tool manufacture, however, generates a large volume of debris which creates a bias on measures of occupation duration/intensity and Sassaman and his colleagues recommend calculating density for total assemblages and for artifacts other than debitage. Unfortunately, too few artifacts other than debitage are present at these sites so density based only on the total assemblage could be calculated. They warn that artifact density should only be calculated for subsurface assemblages with an adequate sample size. None of these conditions exist at any of the sites encountered and both surface and subsurface assemblages are combined. Because of these problems, other types of site analysis such as tool to debitage ratio and assemblage diversity were determined to be inappropriate with the collection obtained during this survey.

An examination of Table 13 reveals several things. First, the smaller sites have a relatively large range in artifact density from 0.01 to 0.07 artifacts per m². The mean density is 0.03, with a standard deviation of 0.02. While representing a low density, it is nevertheless higher than that found at sites greater than 1,000 m², where the range is 0.01 to 0.04 artifacts per m² and the average is 0.02 (standard deviation is 0.01).

This pattern is very similar to that found in the Sicily and Holland Drop Zones (Trinkley et al. 1997:114, Trinkley et al. 1996a:148), with even the mean density being similar in the large sites.

We have previously suggested that the smaller sites tend to have a higher artifact density

since they were used primarily for lithic reduction, resulting in the production of large quantities of flakes congregated or disposed of in a relatively small area. The larger sites, with lower artifact density and a narrower range of variation, exhibit a pattern previously observed at the Sicily and Holland Drop Zones.

Unfortunately, there is relatively little else that the data can tell us at this point. There were relatively few sites with diagnostic remains and those are evenly divided between the larger and smaller sites. Even the temporal episodes are similar in the two groups and occur in similar proportions. The smaller sites include two Archaic components and three Woodland components, while the larger sites reveal six Archaic and six Woodland components.

Table 14.
Raw Material Recovery on Various Tracts, by Percent

	Debitage		Tools	
Project	Q	M	Q	M
Sicily DZ	63.0	37.0	24.0	76.0
Camp Mackall DZ	22.1	77.9	5.7	94.3
Camp Mackall SF	34.6	65.4	-	-
Fort Bragg Gen Sur	46.7	53.3	-	-
Holland DZ	81.9	18.1	60.2	39.8
NTA IV	37.5	62.5	41.6	58.4

Q = quartz, M = metavolcanic

Lithic Resource Use

The Northern Training Area IV survey tract is dominated by metavolcanics, which accounts for 62.5% of the debitage recovered from the sites and 58.4% of all tools. Quartz is, generally speaking, uncommon and seems to occur in somewhat isolated concentrations.

We have noticed in previous studies that the proportion of quartz and metavolcanic materials can be quite variable in the different study areas. These differences are briefly summarized for several of the previous Chicora studies in Table 14.

In general, it appears that those tracts on Fort Bragg proper (Sicily, Fort Bragg General Survey, and Holland) are dominated by quartz, while those further to the west, on Camp Mackall, exhibit a higher proportion of metavolcanic material. The most reasonable explanation for this difference in use may be distance to the raw material source. It was observed that while quartz in the form of river cobbles is locally available in the Fort Bragg area, the closest metavolcanic outcrop is found about 16 km to the west and the large Morrow Mountain quarry is located about 97 km away. In the Camp Mackall area there is no large drainage like the Little River to supply river cobbles, but the project area is considerably closer to metavolcanic rock outcrops, probably only about 6 km to the west. All other things being equal, this difference of 10 km may have been sufficient to encourage a reliance on quartz in the Fort Bragg area. If so, then this may help us to better understand the cost-benefit ratio of the two materials.

The Sicily Drop Zone study (Trinkley et al. 1996a:148-149) found that while metavolcanic flakes were uncommon, the vast majority of the formalized tools were produced from metavolcanic material. The explanation offered for this was that the prehistoric occupants of the area preferred metavolcanics for tools that were to be curated. This pattern, however, appears to break down in the Holland Drop Zone, where about equal numbers of the projectile points were produced from quartz and metavolcanics.

It appears that the occupants of the Northern Training Area IV survey tract relied much more heavily on metavolcanics than on quartz — and this may be the case. Although the results of this survey contradicts previous studies concerning the use of quartz and metavolcanics (see Trinkley 1996a, Braley 1989:49, and Clement et al. 1997:200), the high concentrations of metavolcanics in the Northern Training Area IV survey tract may reflect either trade or general preference for metavolcanics for use as curated tools. Nevertheless, we can point out that the ratio of flakes to tools is quite high when compared to quartz.

Artifacts

Sixteen projectile points, either whole or large enough fragments to be identifiable were recovered during this study (see Figure 47). As previously discussed, these are heavily weighted toward metavolcanic materials. An additional 20 unidentifiable fragments were also recovered. These are primarily nondiagnostic blade or tip fragments. These have a very similar proportion of metavolcanic-quartz usage as the intact points.

The identified points are dominated by Archaic forms — Hardaway, Big Sandy, Kirk, Morrow Mountain, Guilford, and Small Savannah River. All fall within, or very close to, the standard metric and morphological attributes outlined by Coe (1964) and Oliver (1981). Other stone tools include the categories of bifaces and samples of these materials are illustrated in Figure 50.

Pottery was relatively uncommon in the current collection. Sixty-one examples of small sherds (under 2.5 cm in diameter) were recovered. No attempt has been made to types these materials because essential information on paste and surface treatment is difficult, or impossible, to obtain. The collection also includes six examples of Yadkin Cord Marked and nine specimens of Yadkin Fabric Impressed. The Badin wares were represented by two examples of fabric impressed pottery and one specimen with an unidentifiable surface treatment. One specimen of Hanover Cord Marked was also recovered. Examples of these different wares are illustrated in Figure 51.

Recommendations

The historic period site recommended as potentially eligible (31HT691**) should be monitored to ensure that the location is undisturbed until such time as it can be tested and an eligibility determination completed. Situated in a drop zone setting, the site is at considerable risk from military operations. The testing at this site should focus on the discovery of subsurface remains, perhaps using a 5 meter test interval in those areas currently identified as exhibiting the densest concentration of materials. If intact soil horizons with cultural material can be found, it may be appropriate to conduct limited block excavations as part of one testing protocol. Additional research design elements, however, should be based on the findings of the intensive testing. Archival research is also recommended. This research should trace the property ownership and compile either socio-economic or demographic information about the former inhabitants.

The prehistoric site recommended as potentially eligible (31HT690*) should be monitored as well. Expanded military activities at Fort Bragg may place the site at risk and its proximity to off post areas may increase the danger of unauthorized collection. As previously outlined, this site should receive additional, intensive testing to determine its eligibility, with the testing focusing on the discovery of subsurface remains, perhaps using a 5 meter test interval in those areas currently identified as exhibiting the densest concentration of materials. If intact soil horizons with cultural material can be found, it may be appropriate to conduct block excavations as part of the data recovery work. Additional research design, however, should be based on the findings of the intensive testing. Because of the rapid soil movement observed at this site, we strongly recommend erosion control markers be placed at the site in an effort to determine the amount of soil loss taking place.

Although there are other sites which will likely continue to produce small quantities of artifacts as the soils are disturbed or moved about, they are not recommended as eligible or potentially eligible for inclusion on the National Register of Historic Places. Consequently, no other management activities are recommended for the remainder of the sites identified in the survey tract.

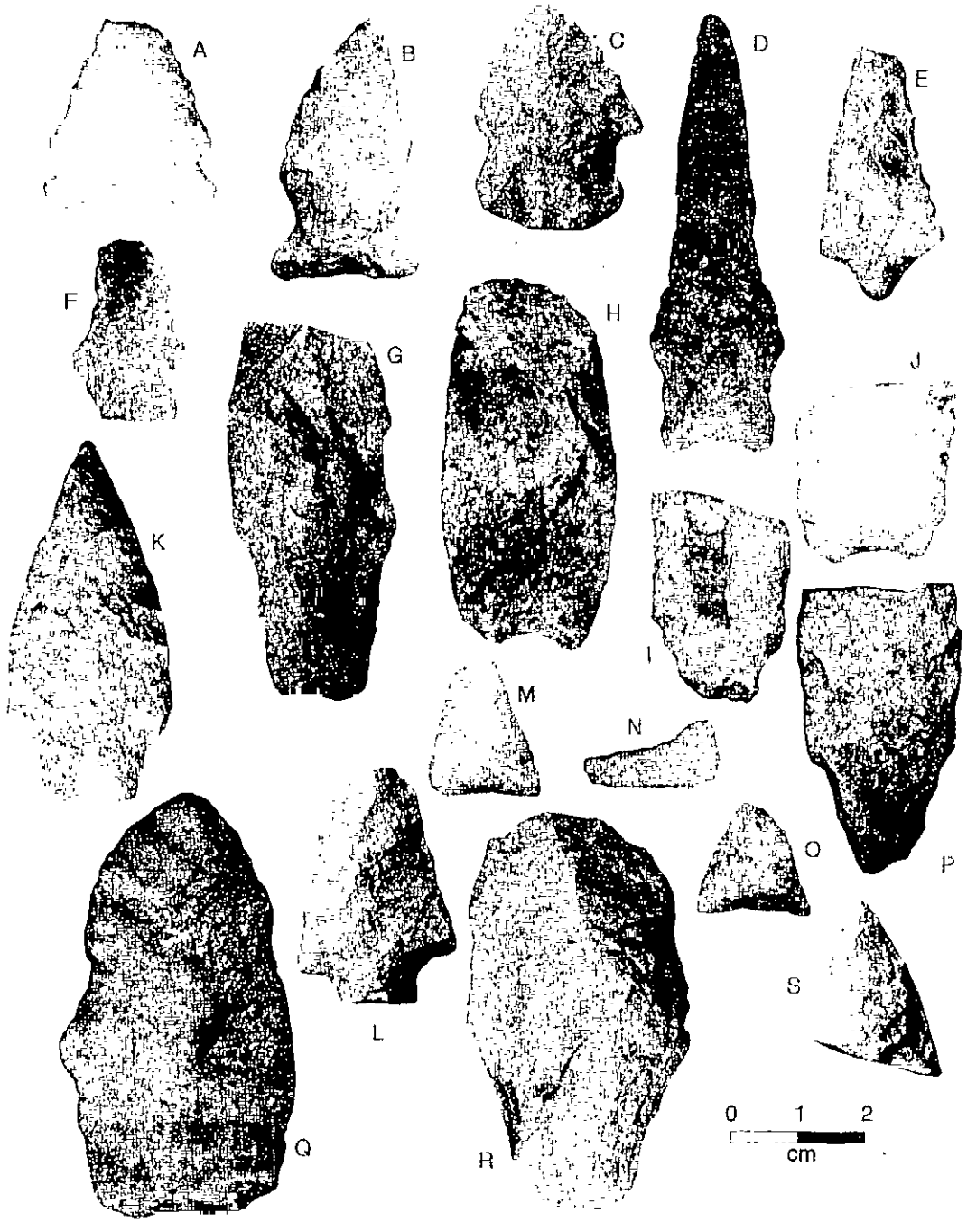

Figure 50. Artifacts recovered from Northern Training Area IV. A, Hardaway Side Notched (97940-a1); B, Big Sandy (97929-a3); C, Kirk Corner Notched (97934-a37); D, Kirk Stemmed (97952-a6); E, Morrow Mountain I (97934-a40); F, Morrow Mountain II (97934-a11); G, Guilford Lanceolate (97934-a24); H, Guilford Lanceolate (97934-a36); I, Guilford Lanceolate (97934-a49); J, Guilford Lanceolate (97934-a51); K, Small Savannah River Stemmed (97930-a11); L, Gypsy Stemmed (97934-a222); M, Caraway Triangular (97934-a50); N, possible Caraway Triangular base (97934-a17);); O, Clarksville Triangular (97953-a3); P, Morrow Mountain II (97954a14); Q, Biface (97934-a35); R, Biface (97934-a133); S, Biface tip (97934-a125).

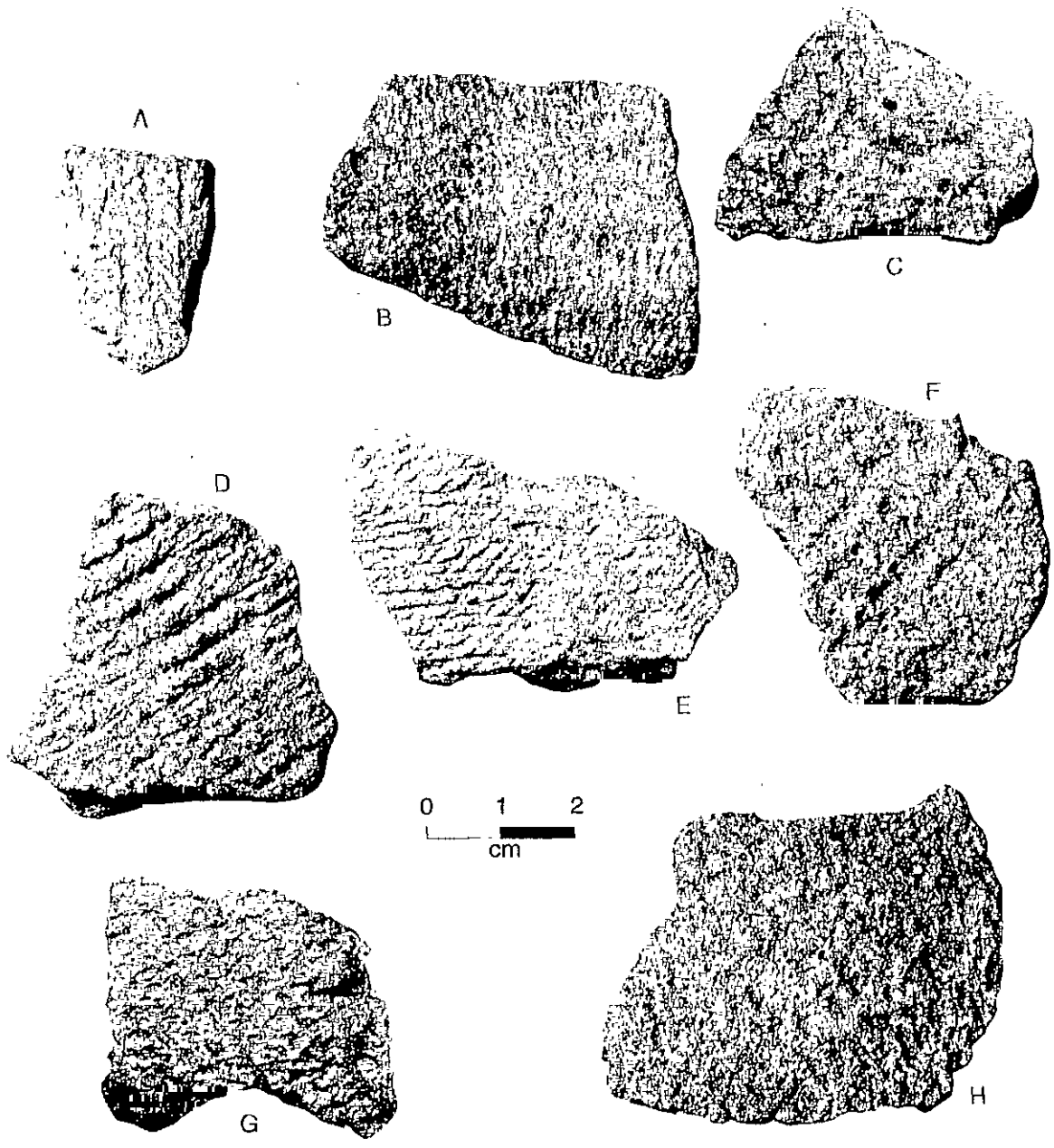

Figure 51. Artifacts recovered from Northern Training Area IV. A, Hanover Cord Marked (97934-p98); B, Badin Fabric Impressed (97958-p3); C, Badin Fabric Impressed (97934-p71); D, Yadkin Cord Marked (97934-p19); E, Yadkin Cord Marked (97934-p2); F, Yadkin Fabric Impressed (97934-p12); G, Yadkin Fabric Impressed (97934-p25); H, Yadkin Fabric Impressed (97934-p54).

SOURCES CITED

Abbott, Lawrence E., Jr.
1994 *Spring Lake Bypass: Archeological, Historical, and Architectural Historical Consulting Services/Cultural Resource Survey.* N.C. Department of Transportation TIP No. R-2629, Raleigh.

Abbott, Lawrence E., Jr., John S. Cable, Mary Beth Reed, and Erica E. Sanborn
1995 *An Archaeological Survey and Testing of the McLean-Thompson Property Land Acquisition, and the Ambulatory Health Care Clinic Project, Fort Bragg, Cumberland County, North Carolina.* Technical Report 349. New South Associates, Stone Mountain, Georgia.

Ames, Kenneth L.
1985 The Stuff of Everyday Life: American Decorative Arts and Household Furnishings. In *Material Culture: A Research Guide*, edited by Thomas J. Schlereth, pp. 79-112. University Press of Kansas, Lawrence.

Anderson, David G.
1990 A North American Paleoindian Projectile Point Database. *Current Research in the Pleistocene* 7:67-69.

1992a A History of Paleoindian and Early Archaic Research in the South Carolina Area. In *Paleoindian and Early Archaic Period Research in the Lower Southeast: A South Carolina Perspective*, edited by David G. Anderson, Kenneth E. Sassaman, and Christopher Judge, pp. 7-18. Council of South Carolina Professional Archaeologists, Columbia.

1992b Models of Paleoindian and Early Archaic Settlement in the Lower Southeast. In *Paleoindian and Early Archaic Period Research in the Lower Southeast: A South Carolina Perspective*, edited by David G. Anderson, Kenneth E. Sassaman, and Christopher Judge, pp. 28-47. Council of South Carolina Professional Archaeologists, Columbia.

Anderson, David G., Charles E. Cantley, and A. Lee Novick
1982 *The Mattassee Lake Sites: Archaeological Investigations Along the Lower Santee River in the Coastal Plain of South Carolina.* Commonwealth Associates, Inc., Jackson, Michigan.

Anderson, David G. and Kenneth E. Sassaman
1996 *The Paleoindian and Early Archaic Southeast.* University of Alabama Press, Tuscaloosa.

Atkinson, James R. (editor)
1987 *The Blackburn Cemetery: An Abandoned Burial Site on the Old Natchez Trace in Maury County, Tennessee.* National Park Service, Southeast Archaeological Center, Tallahassee.

Barrett, John G.
1963 *The Civil War in North Carolina.* University of North Carolina Press, Chapel Hill.

Barry, John M.
1980 *Natural Vegetation of South Carolina.* University of South Carolina Press, Columbia.

Bense, Judith A.
1994 *Archaeology of the Southeastern United States: Paleoindian to World War I.* Academic Press, New York.

Bense, Judith A., Hester A. Davis, Lorraine Heartfield, and Kathleen Deagan
1986 Standards and Guidelines for Quality Control in Archaeological Resource Management in the Southeastern United States. *Southeastern*

Archaeology 5:52-62.

Blanton, Dennis B., Christopher T. Espenshade, and Paul E. Brockington, Jr.
1986 *An Archaeological Study of 38SU83: A Yadkin Phase Site in the Upper Coastal Plain of South Carolina*. Garrow and Associates, Inc., Atlanta.

Braley, Chad O.
1989 *Cultural Resources Survey of Fort Bragg's Northern Training Area, Harnett, Moore, and Cumberland Counties, North Carolina*. Report on file with the U.S. Army Corps of Engineers, Savannah.

1990 *Fort Bragg Historic Preservation Plan*, vol. I. Gulf Engineers and Consultants, Inc., Baton Rouge, Louisiana and Southeastern Archaeological Services, Inc., Athens, Georgia.

Braley, Chad O. and Joseph Schuldenrein
1993 *An Intensive Cultural Resources Survey and Site Testing on Fort Bragg's Sicily Drop Zone, Hoke County, North Carolina*. Gulf Engineers and Consultants, Inc., Baton Rouge, Louisiana and Southeastern Archaeological Services, Inc., Athens, Georgia.

Brennan, Louis A.
1982 A Compilation of Fluted Points of Eastern North America by County and Distribution: An AENA Project. *Archaeology of Eastern North America* 10:27-46.

Brooks, Mark J.
1980 *Late Holocene Sea Level Variability and Prehistoric Human Adaptations in the Lower Coastal Plain of South Carolina*. Master's thesis, Department of Anthropology, Arizona State University, Tempe.

Brooks, Mark J., D.J. Colquhoun, J.G. Brown, and P.A. Stone
1989 Sea Level Change, Estuarine Development and Temporal Variability in Woodland Period Subsistence-Settlement Patterning on the Lower Coastal Plain of South Carolina. In *Studies in South Carolina Archaeology*, edited by Albert C. Goodyear and Glen T. Hanson, pp. 91-100. Anthropological Studies 9. South Carolina Institute of Archaeology and Anthropology, University of South Carolina, Columbia.

Brooks, Mark J., Peter A. Stone, Donald J. Colquhoun, Janice G. Brown, and Kathy B. Steele
1986 Geoarchaeological Research in the Coastal Plain Portion of the Savannah River Valley. *Geoarchaeology* 1:293-307.

Brooks, Richard D. and David Colin Crass
1991 *A Desperate Poor Country: History and Settlement Patterning on the Savannah River Site, Aiken and Barnwell Counties, South Carolina*. Savannah River Archaeological Research Papers 2. Occasional Papers of the Savannah River Archaeological Research Program, South Carolina Institute of Archaeology and Anthropology, University of South Carolina.

Brown, Tom, Jr. and Brandt Morgan
1983 *Tom Brown's Field Guide to Wilderness Survival*. Berkeley Books, New York.

Butler, William B.
1987 Significance and Other Frustrations in the CRM Process. *American Antiquity* 52:820-829.

Cable, John S.
1982 Differences in Lithic Assemblages of Forager and Collector Strategies. In *Archaeological Survey and Reconnaissance Within the Ten-Year Floodpool Harry S. Truman Dam and Reservoir*, edited by Richard Taylor. Report submitted to the U.S. Army Corps of Engineers, Kansas City District.

Cable, John S. and James W. Mueller
1980 *The Cultural Resources Survey and*

Evaluation of US 421 from Siler City to Stanly, Chatham and Randolph Counties, North Carolina. Commonwealth Associates, Inc., Jackson, Michigan. Submitted to North Carolina Department of Transportation, Raleigh.

Cambron, James W. and David C. Hulse
1969 *Handbook of Alabama Archaeology, Part I: Point Types*. Archaeological Research Association of Alabama, Inc., Birmingham.

Campbell, E.W.C., W.H. Campbell, Ernst Antevs, C.E. Amsden, J.A. Barbieri, and F.D. Bode
1937 The Archaeology of the Pleistocene Lake Mohave: A Symposium. *Southwest Museum Papers* 11.

Chapman, Jefferson
1977 *Archaic Period Research in the Lower Little Tennessee River Valley, 1975: Icehouse Bottom, Harrison Branch, Thirty Acre Island, Calloway Island*. Report of Investigations 18. University of Tennessee, Knoxville.

1985a Archaeology and the Archaic Period in the Southern Ridge-an-Valley Province. In *Structure and Process in Southeastern Archaeology*, edited by Roy S. Dickens and H. Trawick Ward, pp. 137-179. The University of Alabama Press, University.

1985b *Tellico Archaeology: 12,000 Years of Native American History*. Reports of Investigations 43, Occasional Paper 5, University of Tennessee, Knoxville.

Charles, Tommy
1981 Dwindling Resources: An Overture to the Future of South Carolina's Archaeological Resources. *Notebook* 13:1-85.

Claggett, Steven and John Cable
1982 *The Haw River Sites: Archaeological Investigations at Two Stratified Sites in the North Carolina Piedmont*. Commonwealth Associates, Inc., Jackson, Michigan.

Clement, Christopher Ohm, Steven D. Smith, Ramona M. Grunden, and Jill S. Quattlebaum
1997 Archaeological Survey of 4,000 Acres on the Lower Little River Cumberland, Hoke, and Moore Counties, Fort Bragg, North Carolina. South Carolina Institute of Archaeology and Anthropology, University of South Carolina, Columbia.

Crawford, Robert G.H.
1966 *An Archaeological Survey of Lenoir County, North Carolina*. Unpublished Master's thesis. University of Florida, Gainesville.

Coe, Joffre L.
n.d. The Poole Site: Randolph County. Ms. on file, Research Laboratories of Anthropology, University of North Carolina, Chapel Hill.

1949 Excavating in a Parking Lot at Morrow Mountain State Park. *Southern Indian Studies* 1(1):20-21.

1952 The Cultural Sequence of the Carolina Piedmont. In *Archaeology of the Eastern United States*, edited by James B. Griffin, pp. 301-311. University of Chicago Press, Chicago.

1964 The Formative Cultures of the Carolina Piedmont. *Transactions of the American Philosophical Society* 54(5).

1972 Field Report of Highway Salvage Archaeology at Site Yd'1, Yadkin County, North Carolina. Ms. on file, Research Laboratories of Anthropology, University of North Carolina, Chapel Hill.

1983 Through A Glass Darkly: An Archaeological View of North Carolina's More Distant Past. In *The Prehistory of North Carolina: An Archaeological Symposium*, edited by Mark A. Mathis and Jeffrey J. Crow, pp. 161-177. N.C. Division of Archives and History, Raleigh.

Coe, Joffre L. (editor)
1995 *Town Creek Indian Mound: A Native American Legacy*. University of North Carolina Press, Chapel Hill.

Coe, Joffre L., H.T. Ward, M.D. Graham, L. Navey, S.H. Hogue, and J.H. Wilson, Jr.
1982 *Archaeological and Paleo-osteological Investigations at the Cold Morning Site in New Hanover County, North Carolina*. Research Laboratories of Anthropology, University of North Carolina, Chapel Hill.

Colquhoun, Donald J., Mark Brooks, W.H. Abbott, F.W. Stapor, W.S. Newman, and R.R. Pardi
1980 Principles and Problems in Establishing a Holocene Sea-Level Curve for South Carolina. *Excursions in Southeastern Geology, Geological Society of America Guidebook* 20:143-159.

Corbitt, David L.
1950 *The Formation of the North Carolina Counties, 1663-1943*. State Department of Archives and History, Raleigh.

Cruikshank, J.W.
1944 *North Carolina Forest Resources and Industries*. Miscellaneous Publication 533. U.S. Department of Agriculture, Washington, D.C.

Cushion, John P.
1976 *Pottery and Porcelain Tablewares*. Studio Vista, London.

Daniel, I. Randolph, Jr.
1992 Early Archaic Settlement in the Southeast: A North Carolina Perspective. In *Paleoindian and Early Archaic Period Research in the Lower Southeast: A South Carolina Perspective*, edited by David G. Anderson, Kenneth E. Sassaman, and Christopher Judge, pp. 68-77. Council of South Carolina Professional Archaeologists, Columbia.

Davis, John D.
1987 Early Woodland of the North Carolina Piedmont: New Information from the E. Davis Site. Paper presented at the 44th Southeastern Archaeological Conference, Charleston, South Carolina.

Delcourt, Paul A. and Hazel R. Delcourt
1987 Long-Term Forest Dynamics of the Temperate Zone. *Ecological Studies, Analysis and Synthesis*, vol. 63. Springer-Verlag, New York.

Dockall, Helen Danzeiser, Joseph F. Powell, and D. Gentry Steele
1996 *Home Hereafter: An Archaeological and Bioarchaeological Analysis of an Historic African-American Cemetery (41GV125)*. Report of Investigations 5. Center for Environmental Archaeology, Texas A&M University, College Station.

Federal Writers' Project
1988 *North Carolina: The WPA Guide to the Old North State*. University of South Carolina Press, Columbia.

Ferguson, Leland G.
1971 *South Appalachian Mississippian*. Ph.D. dissertation, University of North Carolina, Chapel Hill. University Microfilms, Ann Arbor, Michigan.

Gade, Ole and H. Daniel Stillwell
1986 *North Carolina: People and Environments*. GEO-APP Publishing Co., Boone, N.C.

Gardner Paul S.
1980 *An Analysis of Dan River Ceramics from Virginia and North Carolina*. Unpublished Master's Thesis, Department of Anthropology, University of North Carolina, Chapel Hill.

1990 *Excavations at the Amity Site: Final Report of the Pomeiooc Project: 1984-1989*. Archaeological Research Report 7. Archaeological Laboratory, Department of Sociology and Anthropology, East Carolina University, Greenville, North Carolina.

Glassow, Michael A.
1977 Issues in Evaluating the Significance of Archaeological Resources. *American Antiquity* 42:413-420.

Godden, Geoffrey A.
1964 *Encyclopaedia of British Pottery and Porcelain Marks*. Schiffer Publishing, Exton, Pennsylvania.

1985 *English China*. Barrie and Jenkins, London.

Goodyear, Albert C., John H. House, and Neal W. Ackerly
1979 *Laurens-Anderson: An Archaeological Study of the Inter-Riverine Piedmont*. Anthropological Studies 4, Occasional Papers of the Institute of Archaeology and Anthropology, University of South Carolina, Columbia.

Grunden, Romana M., Steven D. Smith, and Jill S. Quattlebaum
1995 *Archaeological Investigations of the Confederate Additions to the North Carolina Arsenal, Site 31CD280, Fayetteville, North Carolina*. Institute of Archaeology and Anthropology, University of South Carolina, Columbia.

Gunn, Joel D. and Kathy Wilson
1993 *Archaeological Data Recovery Investigations at Sites 38CT54 and 38CT58 Along the S.C. 151 Jefferson Bypass, Chesterfield County, South Carolina*. Garrow and Associates, Raleigh. Submitted to the S.C. Department of Highways and Public Transportation, Columbia.

Guernsey, Alfred H. and Henry M. Alden (editors)
1977 [1866] Harpers Pictorial History of the Civil War. Harper and Brothers, n.p. 1977 facsimile ed. Fairfax Press, n.p.

Hackbarth, M.R. and D.M. Fournier-Hackbarth
1981 *Prehistoric Settlement in Sampson County, North Carolina*. N.C. Division of Archives and History, Raleigh.

Haag, William G.
1958 *The Archaeology of Coastal North Carolina*. Coastal Studies Institute and Department of Geography and Anthropology, Louisiana State University, Baton Rouge.

Hill, Michael
1983 *An Historical Overview of the State Lakes Region of Southeastern North Carolina*. Ms. on file, Archaeology Branch, Division of Archives and History, North Carolina Department of Cultural Resources, Raleigh.

Hilliard, Sam B.
1984 *Atlas of Antebellum Southern Agriculture*. Louisiana State University Press, Baton Rouge.

Holmes, J.A.
1916 Indian Mounds of the Cape Fear. In *Chronicles of the Cape Fear River, 1660-1916*, by James Sprunt, n.p., Raleigh.

Horton, Robert E.
1969 *Soil Survey of Scotland County, North Carolina*. U.S. Department of Agriculture, Soil Conservation Service, Washington.

Hudson, Berman D.
1984 *Soil Survey of Cumberland and Hoke Counties, North Carolina*. U.S. Department of Agriculture, Soil Conservation Service, Washington.

Jameson, John
1986a *An Intensive Cultural Resources Survey of the Proposed Manufactured Housing Community Site Project, Fort Bragg, Cumberland County, North Carolina*. Ms. on file Archaeology Branch, North Carolina Division of Archives and History, Raleigh.

1986b *A Cultural Resources Survey of the Special Operations Command Cantonment Area, Fort Bragg, Cumberland County, North Carolina. Addendum Report*. Ms. on file with the Archaeology Branch, North Carolina Division of Archives and History, Raleigh.

Jones, Olive R.
1986 *Cylindrical English Wine and Beer Bottles, 1735-1850.* National Historic Parks and Sites Branch, Quebec.

Jones, Olive R. and Catherine Sullivan
1985 *The Parks Canada Glass Glossary for the Description of Containers, Tableware, Flat Glass, and Closures.* National Historic Parks and Sites Branch, Parks Canada, Quebec.

Keel, Bennie
1985 Peer Review. In *Gone to a Better Land: A Biohistory of a Rural Black Cemetery in the Post-Reconstruction South*, edited by Jerome C. Rose, pp. 214-215. Research Series 25. Arkansas Archaeological Survey, Fayetteville.

Kern, William H. and Beverly A. Boyko
1996 Fort Bragg Cemetery Survey. Ms. on file, DPWE, Projects Group Office, Fayetteville, North Carolina.

King, Adam, William Chapman, and Thomas Gresham
1994 *Cultural Resource Survey of Whitehurst Tract, Moore County, North Carolina.* Gulf Engineering and Consultants, Inc., Baton Rouge, Louisiana.

Küchler, A.W.
1964 *Potential Natural Vegetation of the Conterminous United States.* Special Publication 36. American Geographical Society, New York.

Lauztenheiser, Loretta and Jane Eastman
1991 *Prehistoric Ceramics of North Carolina: A Quick Tour of the Published Literature.* Coastal Carolina Research, Inc. Tarboro, North Carolina.

Lefler, Hugh T. and Albert R. Newsome
1973 *The History of a Southern State: North Carolina.* University of North Carolina Press, Chapel Hill.

Lefler, Hugh T. and William S. Powell
1973 *Colonial North Carolina: A History.* Charles Scribner's Sons, New York.

Leone, Mark P. and Neil Asher Silberman (editors)
1995 *Invisible America: Unearthing Our Hidden History.* Henry Holt, New York.

Loftfield, Thomas C.
1976 *"A Briefe and True Report..." An Archaeological Interpretation of the Southern North Carolina Coast.* Unpublished Ph.D. dissertation. Department of Anthropology, University of North Carolina, Chapel Hill.

1978 *Excavations at 31On'33, A Late Woodland Seasonal Village.* University of North Carolina, Wilmington. Conducted for the Heritage Conservation and Recreation Service, National Park Service, Atlanta.

1979 *Cultural Resource Reconnaissance of Fort Bragg, Camp Mackall, and Simmons Army Airfield, North Carolina.* Coastal Zone Resources Division, Ocean Data Systems, Inc., Wilmington, North Carolina.

Mathew, William M. (editor)
1992 *Agriculture, Geology, and Society in Antebellum South Carolina: The Private diary of Edmund Ruffin, 1843.*University of Georgia Press, Athens.

MacCord, Howard
1966 The McLean Mound, Cumberland County, North Carolina. *Southern Indian Studies* 16:3-45.

McCullough, David
1985 *A Cultural Resources Survey of the Special Operations Command Cantonment Area, Fort Bragg, Cumberland County, North Carolina.* Ms. on file Archaeology Branch, North Carolina Division of Archives and History, Raleigh.

McCusker, John J. and Russel R. Menard
1985 *The Economy of British America, 1607-1789.* University of North Carolina Press, Chapel Hill.

McKearin, George L. and Helen McKearin
1972 *American Glass*. Crown Publishers, New York.

McLean, David A. and Michael R. Sellon
1978 *Documentary Research of the Lumber River Basin*. Ms. on file, Department of Social Sciences, St. Andrews College, Laurinburg, North Carolina.

1979 *Archaeological Field Reconnaissance and Excavations at the Rockfish Creek Waste Treatment Facility*. Ms. on file, Department of Social Sciences, St. Andrews College, Laurinburg.

McNally, Paul
1982 Table Glass in Canada, 1700-1850. *Parks Canada History and Archaeology* 60.

Meyer, Duane
1961 *The Highland Scots of North Carolina, 1732-1776*. University of North Carolina Press, Chapel Hill.

Michie, James L.
1977 *The Late Pleistocene Human Occupation of South Carolina*. Unpublished Honor's Thesis, Department of Anthropology, University of South Carolina, Columbia.

Miller, George
1980 Classification and Economic Scaling of 19th Century Ceramics. *Historical Archaeology* 14:1-40.

1991 A Revised Set of CC Values for Classification and Economic Scaling of English Ceramics from 1787 to 1880. *Historical Archaeology* 25(1):1-25.

Mountjoy, Joseph B.
1989 Early Radiocarbon Dates from a Site on the Pee Dee-Siouan Frontier in the Piedmont of Central North Carolina. *Southern Indian Studies* 38:7-22.

Noël Hume, Ivor
1978 *A Guide to Artifacts of Colonial America*. Alfred A. Knopf, New York.

Norman-Wilcox, Gregor
1965 Pottery and Porcelain. In *The Concise Encyclopedia of American Antiques*, edited by Helen Comstock, p.132-161. Hawthorn, New York.

North Carolina Department of Conservation and Development
1958 *Geologic Map of North Carolina*. Compiled by the Department of Conservation and Development, Raleigh.

Nye, W. S.
n.d. The History of Fort Bragg. Unpublished manuscript in the North Carolina Collection, UNC Library, Chapel Hill.

Oates, John A.
1972 *The Story of Fayetteville and the Upper Cape Fear*. Dowd Press, Charlotte, N.C.

Oliver, Billy L.
1981 *The Piedmont Tradition: Refinement of the Savannah River Stemmed Point Type*. Unpublished Master's thesis, Department of Anthropology, University of North Carolina, Chapel Hill.

1985 Tradition and Typology: Basic Elements of the Carolina Projectile Point Sequence. In *Structure and Process in Southeastern Archaeology*, edited by Roy S. Dickens and H. Trawick Ward, pp. 195-211. The University of Alabama Press, University.

Oliver, Billy L., Stephen R. Claggett, and Andrea Lee Novick
1986 Lithic Analysis. In *Indian and Freedmen Occupation at the Fish Hall Site (38BU805), Beaufort County, South Carolina*, edited by Michael Trinkley, pp. 183-207. Research Series 1. Chicora Foundation, Inc., Columbia.

Olmsted, Frederick Law
1953 *The Cotton Kingdom: A Traveller's Observations on Cotton and Slavery in the American Slave States*. Alfred A. Knopf, New York.

Orser, Charles E., Jr.
1988 *The Material Basis of the Postbellum Tenant Plantation: Historical Archaeology in the South Carolina Piedmont*. University of Georgia Press, Athens.

Peabody, Charles
1910 The Exploration of Mounds in North Carolina. *American Anthropologist* 12:425-433.

Peck, Rodney M.
1988 Clovis Points of Early Man in North Carolina. *Piedmont Journal of Archaeology* 6:1-22.

Peirce, Donald C.
1988 *English Ceramics: The Frances and Emory Cocke Collection*. High Museum of Art, Atlanta.

Perkinson, Phil
1971 North Carolina Fluted Points: Survey Report Number One. *Southern Indian Studies* 23:3-40.

1973 North Carolina Fluted Points: Survey Report Number Two. *Southern Indian Studies* 25:3-60.

Phelps, David S.
1981 *The Archaeology of Colington Island*. Archaeological Research Report 3. Archaeology Laboratory, Department of Sociology and Anthropology, East Carolina University, Greenville, North Carolina.

1982 *A Summary of Colington Phase Sites in the Tidewater Zone of North Carolina*. Archaeology Laboratory, Department of Sociology and Anthropology, East Carolina University, Greenville, North Carolina.

1983 Archaeology of the North Carolina Coast and Coastal Plain: Problems and Hypotheses. In *The Prehistory of North Carolina: An Archaeological Symposium*, edited by Mark A. Mathis and Jeffrey J. Crow, pp. 1-52. North Carolina Division of Archives and History, Department of Cultural Resources, Raleigh.

1984 *Archaeology of the Tillett Site: The First Fishing Community at Wanchese, Roanoke Island*. Archaeological Research Report 6. Archaeology Laboratory, Department of Sociology, Anthropology, and Economics, East Carolina University, Greenville, North Carolina.

Phelps, David Sutton, John B. Green III, and Kenneth C. Hartsell
1979 *An Archaeological-Historical Study of the Bryan Cemetery and Site 31CV25, Simmons-Nott Airport, New Bern, North Carolina*. Publication 10. North Carolina Archaeological Council, Raleigh.

Price, Cynthia
1979 *19th Century Ceramics in the Eastern Ozark Boarder Region*. Monograph Series 1. Center of Archaeological Research, Southwest Missouri University, Springfield.

Rankin, Hugh F.
1989 *The Pirates of Colonial North Carolina*. North Carolina Department of Cultural Resources, Raleigh.

Rathbun, Ted A.
1985 Peer Review. In *Gone to a Better Land: A Biohistory of a Rural Black Cemetery in the Post-Reconstruction South*, edited by Jerome C. Rose, pp. 208-211. Research Series 25. Arkansas Archaeological Survey, Fayetteville.

Reed, William G.
1936 Climate. In *Atlas of American Agriculture*, edited by O.E. Baker, pp. 29-48. U.S. Department of Agriculture, Washington, D.C.

Reid, Jefferson
1967 *Pee Dee Pottery from the Mound at Town Creek*. Unpublished Master's thesis. Department of Anthropology, University of North Carolina, Chapel Hill.

Robinson, Kenneth W.
1986 *Archaeological Survey of Selected Areas in Cumberland County, North Carolina*. Cumberland County Joint Planning Board, Fayetteville, North Carolina.

Ross, Malcolm
1965 *The Cape Fear*. Holt, Rinehart and Winston, New York.

Rypkema, Donovan D.
1990 Preservation Under (Development) Pressure. *Vital Speeches of the Day* 56:268-273).

Sassaman, Kenneth E.
1983 *Middle and Late Archaic Settlement in the South Carolina Piedmont*. Unpublished master's thesis. Department of Anthropology, University of South Carolina, Columbia.

1993 *Early Pottery in the Southeast: Tradition and Innovation in Cooking Technology*. University of Alabama Press, Tuscaloosa.

1995 The Cultural Diversity of Interactions Among Mid-Holocene Societies of the American Southeast. In *Native American Interactions: Multiscalar Analyses and Interpretations in the Eastern Woodlands*, edited by M.S. Nassanmey and K.E. Sassaman. University of Tennessee Press, Knoxville (in press).

Sassaman, Kenneth E. and David G. Anderson
1990 Typology and Chronology. In *Native-American Prehistory of the Middle Savannah River Valley*, edited by Kenneth E. Sassaman, Mark J. Brooks, Glen T. Hanson, and David G. Anderson, pp. 143-216. Savannah River Archaeological Research Publication 1. South Carolina Institute of Archaeology and Anthropology, University of South Carolina, Columbia.

1994 *Middle and Late Archaic Archaeological Records of South Carolina: A Synthesis for Research and Resource Management*. Council of South Carolina Professional Archaeologists, Columbia.

Sassaman, Kenneth E., Mark J. Brooks, Glen T. Hanson, and David G. Anderson
1990 *Native American Prehistory of the Middle Savannah River Valley*. Savannah River Archaeological Research Papers 1. South Carolina Institute of Archaeology and Anthropology, University of South Carolina, Columbia.

Schonhorn, Manuel (editor)
1972 *Daniel Dofoe's A General History of the Pyrates*. University of South Carolina Press, Columbia.

Segovia, Antonio V.
1985 Archaeological Geology of the Savannah River Valley and Main Tributaries in the Richard B. Russell Multiple Resource Area. *Russell Papers*. Manuscript on file with Archaeological Services, National Park Service, Atlanta.

Service, Elman R.
1966 *The Hunters*. Prentice-Hall, Englewood Cliffs, New Jersey.

Shantz, H.L. and Raphael Zon
1936 Natural Vegetation. In *Atlas of American Agriculture*, edited by O.E. Baker, pp. 1-29. U.S. Department of Agriculture, Washington, D.C.

Shelford, Victor E.
1974 *The Ecology of North America*. University of Illinois Press, Urbana.

Silver, Timothy
1990 *A New Face on the Countryside: Indians, Colonists, and Slaves in South*

Atlantic Forests, 1500-1800. Oxford University Press, New York.

Smith, Eugene A.
1880 *Report on the Cotton Production of the State of North Carolina With a Discussion of the General Agricultural Features of the State.* Department of the Interior, Census Office. GPO, Washington, D.C.

South, Stanley A.
1959 *A Study of the Prehistory of the Roanoke Rapids Basin.* Master's thesis, Department of Sociology and Anthropology, University of North Carolina, Chapel Hill.

1972 The Unabridged Version of "The Tribes of the Carolina Lowland." Ms. on file, S.C. Institute of Archaeology and Anthropology, University of South Carolina, Columbia.

1976 An Archaeological Survey of Southeastern North Carolina. *South Carolina Institute of Archaeology and Anthropology Notebook* 93.

1977 *Method and Theory in Historical Archaeology.* Academic Press, New York.

Spangler, David G.
1994 Soil Survey of Harnett County, North Carolina. U.S. Department of Agriculture, Soil Conservation Service, Washington.

State Board of Agriculture
1896 *North Carolina and its Resources.* M.I & J.C. Stewart, Public Printers and Binders, Winston, N.C.

Sutton, Mark Q. and Brooke S. Arkush
1996 *Archaeological Laboratory Methods: An Introduction.* Kendal/Hunt Publishing Company, Dubuque, Iowa.

Townsend, Jan, John H. Sprinkle, Jr., and John Knoerl
1993 *Guidelines for Evaluating and Registering Historical Archaeological Sites and Districts.* Bulletin 36. National Park Service, National Register of Historic Places, Washington, D.C.

Trimble, Stanley Wayne
1974 *Man-Induced Soils Erosion on the Southern Piedmont 1700-1970.* Soil Conservation Society of America, Ankey, Iowa.

Trinkley, Michael
1976 *A Typology of Thom's Creek Pottery from the South Carolina Coast.* Unpublished Master's thesis. Department of Anthropology, University of North Carolina, Chapel Hill.

1990 *An Archaeological Context for the South Carolina Woodland Period.* Research Series 22. Chicora Foundation, Inc., Columbia.

Trinkley, Michael, Natalie Adams, and Debi Hacker
1996a *An Archaeological Survey of the 557.5 Ha Sicily Drop Zone, Fort Bragg, Hoke County, North Carolina.* Research Series 182. Chicora Foundation, Inc., Columbia.

Trinkley, Michael, William B. Barr, and Debi Hacker
1996b *An Archaeological Survey of the 230 Ha Camp Mackall Drop Zone and 70 Ha Manchester Road Tract, Fort Bragg, Scotland and Cumberland Counties, North Carolina.* Research Series 187. Chicora Foundation, Inc., Columbia.

1996c *Fort Bragg 3: An Archaeological Survey of the 29.57 Ha Camp Mackall Special Forces Training Area and 776.55 Ha, Richmond, Cumberland, and Harnett Counties, North Carolina.* Research Series 193. Chicora Foundation, Inc., Columbia.

Trinkley, Michael, William B. Barr, and Debi Hacker
1997 *Fort Bragg 4: An Archaeological Survey of the 625.73 Ha Holland Drop Zone and 243.81 Ha on Fort Bragg, Cumberland and Hoke Counties, North Carolina. Research Series 203. Chicora Foundation, Inc., Columbia.*

United States Department of Agriculture
1939 *Soils of the United States*. Yearbook Separate No. 1665. Government Printing Office, Washington, D.C.

1980 *Yadkin-Pee Dee River Basin, North and South Carolina*. Forest Resources, United States Department of Agriculture, Washington, D.C.

Vose, Ruth Hurst
1975 *The Antique Collector's Guides: Glass*. Crescent Books, New York.

Walthall, John A.
1980 *Prehistoric Indians of the Southeast: Archaeology of Alabama*. University of Alabama Press, University.

Walton, Peter
1976 *Creamware and Other English Pottery at Temple Newsam House, Leeds: A Catalogue of the Leeds Collection*. Manningham Press, Bradford.

Ward, Trawick
1978 *The Archaeology of Whites Creek, Marlboro County, South Carolina*. Research Laboratories of Anthropology, University of North Carolina, Chapel Hill.

1983 Whites Creek: The Second Time Around. *South Carolina Antiquities* 15:63-65.

Ward, Trawick and Martha Graham
1978 *The Archaeo-Osteology of Three Historic Cemeteries in Person County, N.C.* Research Laboratories of Anthropology, University of North Carolina, Chapel Hill.

Waring, Antonio J., Jr.
1968 The Refuge Site, Jasper County, South Carolina. In *The Waring Papers: The Collected Works of Antonio J. Waring, Jr.*, edited by Stephen B. Williams, pp. 198-208. Papers of the Peabody Museum of Archaeology and Ethnology 58.

Watts, W.A.
1971 Postglacial and Interglacial Vegetation History of Southern Georgia and Central Florida. *Ecology* 52:666-690.

1980 Late Quaternary Vegetation History at White Pond on the Inner Coastal Plain of South Carolina. *Quaternary Research* 13:187-199.

Watts, W.A. and M. Stuiver
1980 Late Wisconsin Climate of Northern Florida and the Origin of Species Rich Deciduous Forests. *Science* 210:325-327.

Wauchope, Robert
1966 Archaeological Survey of Northern Georgia. *Memoirs of the Society for American Archaeology* 21. Salt Lake City.

Wetmore, Ruth
1978 Report on Excavation at the Buie Mound, Robeson County, North Carolina. *S.C. Institute of Archaeology and Anthropology Notebook* 10:30-71.

Wheeler, John H.
1925 *Historical Sketches of North Carolina from 1584 to 1851*. Frederick H. Hitchcock, New York.

Whitehead, Donald R.
1965 Palynology and Pleistocene Phytogeography of Unglaciated Eastern North America. In *The Quaternary of the United States*, edited by W.E. Wright, Jr. and David G. Fry. Princeton University Press, Princeton.

1973 Late-Wisconsin Vegetational Changes in Unglaciated Eastern North America. *Quaternary Research* 3(4):621-631.

Wicker, R.E.
1966 Some Observations Concerning the Exact Location of the Site of Massacre at Piney Bottom. Unpublished manuscript in the possession of the Moore County Historical Association, Southern

Pines, N.C.

Williams, Stephen B.
1965 The Paleoindian era: Proceedings of the 20th Southeastern Archaeological Conference. *Southeastern Archaeological Conference Bulletin* 2.

Wilson, Homes Hogue
1982 *An Analysis of Skeletal Material from Bw°67, Brunswick County, North Carolina*. Unpublished Master's thesis, Department of Anthropology, University of North Carolina, Chapel Hill.

Wilson, Jack H., Jr.
1983 *A Study of the Late Prehistoric, Protohistoric, and Historic Indians of the Carolina and Virginia Piedmont: Structure, Process, and Ecology*. Unpublished Ph.D. Dissertation, Department of Anthropology, University of North Carolina, Chapel Hill.

Wrenn, Tony P. and Elizabeth D. Mulloy
1972 *America's Forgotten Architecture*. Pantheon Books, New York.

Wright, H.E., Jr.
1976 The Dynamic Nature of Holocene Vegetation: A Problem of Paleoclimatic Biogeography, and Stratigraphic Nomenclature. *Quaternary Research* 6:581-596.

Yohe, Robert M., II
1996 Analysis of Flaked Stone Artifacts. In *Archaeological Laboratory Methods: An Introduction*, edited by Mark Q. Sutton and Brooke S. Arkush, pp. 39-68. Kendall/Hunt Publishing, Dubuque, Iowa.

APPENDIX 1.
SPECIMEN CATALOG

Accession Number: 97928

Site Number: 31HT717**

Spec. No.	Location	Number	Description	Class 1
a1	T 63 St 14 (N170 E200)	2	nail fragments	X
p2	N180 E190	1	whiteware, undecorated	X
a3	" "	4	glass, clear	X
a4	" "	1	UID brass object	X
p5	N180 E200	1	whiteware, undecorated	X
p6	" "	1	gray saltglazed stoneware	X
a7	" "	2	glass, clear	X
a8	" "	1	glass, manganese	X
a9	N190 E 200	2	glass, aqua	X
a10	" "	6	nail fragments	X
a11	N190 E210	2	glass clear	X
a12	" "	1	glass, manganese	X
a13	" "	1	glass, aqua	X
a14	N200 E210	1	glass, clear	X
a15	" "	2	UID brass fragments	X
a16	" "	4	nail fragments	X
p17	N200 E210	2	whiteware, undecorated	X
p18	" "	1	bristol glazed stoneware	X
a19	N210 E190	3	nail fragments	X
a20	" "	1	spike fragments	X
p21	N210 E200	1	porcelain, white	X
a22	" "	1	glass, clear	X
a23	" "	1	nail fragment	X
a24	N210 E210	1	nail fragment	X
a25	TP 2 0-10 cm	2	nail fragment	X
a26	TP 2 10-20 cm	1	nail fragment	X
a27	" "	1	spike	X
a28	TP 2 Feature 1	1	glass, clear	X
a29	" "	5	nail fragment	X

Accession Number: 97929

Site Number: 31HT685

Spec. No.	Location	Number	Description	Class 1
m1	N190 E180	2	metavolcanic flakes	
m2	N200 E180	4	metavolcanic flakes	
a3	" "	1	Big Sandy metavolcanic projectile point	X
m4	N200 E190	1	quartz flake	
m5	N200 E200	3	quartz flakes	
m6	TP3 20-30 cm	1	chert flake	

Accession Number: 97930

Site Number: 31HT686

Spec. No.	Location	Number	Description	Class 1
p1	Surface Quad 1	1	small Ph sherd (5.46 grams)	
m2	"	3	metavolcanic flakes	
a3	"	2	quartz bifaces	X
a4	"	1	metavolcanic biface	X
a5	"	1	metavolcanic preform	X
p6	Surface Quad 2	1	small Ph sherd (5.03 grams)	
m7	"	5	metavolcanic flakes	
m8	"	13	quartz flakes	
m9	Surface Quad 3	10	quartz flakes	
m10	"	2	quartz raw material	
a11	"	1	small Savannah River stemmed metavolcanic projectile point	X
m12	Surface Quad 4	3	metavolcanic flakes	
m13	"	1	orthoquartzite flake	
m14	TP 4 (10-20 cm)	1	metavolcanic flake	
a15	"	1	quartz biface	X
m16	TP 4 (20-30 cm)	3	quartz flakes	
a17	":	1	quartz biface	X
m18	TP 4 (30-40 cm)	7	quartz flakes	
m19	TP 4 (40-50 cm)	1	quartz flake	

Accession Number: 97931

Site Number: 31HT687+687**

Spec. No.	Location	Number	Description	Class 1
p1	N200 E180	1	brown salt glazed stoneware	X
a2	N200 E200	2	nail fragments	X
m3	"	4	metavolcanic flakes	
m4	TP 5 (30-40 cm)	1	metavolcanic flake	

Accession Number: 97932

Site Number: 31HT688

Spec. No.	Location	Number	Description	Class 1
m1	N200 E190	1	metavolcanic flake	
m2	"	1	quartz flake	
m3	N200 E200	2	quartz flakes	

Accession Number: 97933

Site Number: 31HT689

Spec. No.	Location	Number	Description	Class 1
m1	N200 E200	2	metavolcanic flakes	

Accession Number: 97934

Site Number: 31HT690

Spec. No.	Location	Number	Description	Class 1
p1	Collection Unit 1 Surface	3	small PH sherds (13.60 g)	
p2	"	1	Yadkin cord marked (16.14g)	X
m3	"	6	metavolcanic flakes	
m4	"	1	quartz flake	
p5	Collection Unit 2 Surface	5	small PH sherds (16.14 g)	
p6	"	2	Yadkin fabric impressed (29.42 g)	X
p7	"	4	Yadkin cord marked (38.78 g)	X

m8	"	33	metavolcanic flakes	
m9	":	17	quartz flakes	
a10	"	1	metavolcanic biface	X
a11	"	1	Morrow Mountain II metavolcanic projectile point base	X
p12	Collection Unit 5 Surface	1	Yadkin fabric impressed (11.05 g)	X
m13	"	2	metavolcanic flakes	
m14	"	20	quartz flakes	
a15	"	1	metavolcanic biface	X
a16	"	1	quartz biface	X
a17	"	1	possible Caraway Triangular quartz projectile point base	X
p18	Collection Unit 6 Surface	2	small PH sherds (8.4 g)	
p19	"	1	Yadkin cord marked (16.88 g)	X
p20	"	1	Yadkin fabric impressed (14.58 g)	X
m21	"	26	metavolcanic flakes	
m22	"	10	quartz flakes	
m23	"	2	quartz raw material (37.11 g)	
a24	"	1	Guilford Lanceolate metavolcanic projectile point	X
p25	Collection Unit 8 Surface	1	Yadkin fabric impressed (12.69 g)	X
m26	"	1	quartz flake	
p27	Collection Unit 9 Surface	6	small PH sherds (18.76 g)	
p28	Collection Unit 10 Surface	1	small PH sherds (12.93 g)	
m29	"	2	metavolcanic flakes	
m30	"	21	quartz flakes	
p31	Collection Unit 11 Surface	4	small PH sherds (17.21 g)	
m32	"	39	metavolcanic flakes	
m33	"	36	quartz flakes	
a34	"	1	metavolcanic biface	X
a35	"	2	quartz bifaces	X
a36	"	1	Guilford Lanceolate metavolcanic projectile point base	X
a37	"	1	Kirk Corner notched metavolcanic projectile point	X
m38	Collection Unit 13 Surface	3	metavolcanic flakes	
m39	"	4	quartz flakes	
a40	"	1	Morrow Mountain I metavolcanic projectile point	X
p41	Collection Unit 14 Surface	1	small PH sherds (4.16 g)	
m42	"	3	metavolcanic flakes	
m43	"	3	quartz flakes	
m44	Collection Unit 16 Surface	3	metavolcanic flakes	
m45	"	3	quartz flakes	
a46	"	1	metavolcanic used flake	X
m47	Collection Unit 17 Surface	7	metavolcanic flakes	
m48	"	3	quartz flakes	
a49	"	1	Guilford Lanceolate metavolcanic projectile point base	X
a50	"	1	Caraway Triangular quartz projectile point	X
a51	"	1	Guilford Lanceolate quartz base	X
m52	Collection Unit 18 Surface	1	metavolcanic flake	

m53	"	1	quartz flake	
p54	Collection Unit 20 Surface	4	Yadkin fabric impressed MEND (33.25 g)	X
m55	Collection Unit 31 Surface	1	metavolcanic flake	
m56	"	2	quartz flake	
m57	Collection Unit 32 Surface	1	metavolcanic flake	
m58	"	2	quartz flakes	
m59	Collection Unit 33 Surface	1	metavolcanic flake	
m60	"	1	quartz flake	
a61	"	1	quartz hammerstone	X
m62	N170 E230	2	metavolcanic flakes	
m63	N180 E220	1	metavolcanic flake	
p64	N180 E240	1	small PH sherd (4.10 g)	
m65	"	1	metavolcanic flake	
m66	"	1	quartz flake	
p67	N180 E250	2	small PH sherds (9.98 g)	
m68	"	9	metavolcanic flakes	
m69	"	3	quartz flakes	
m70	N180 E260	1	metavolcanic flake	
p71	N180 E280	1	Badin fabric impressed (9.95 g)	X
m72	N190 E210	3	metavolcanic flakes	
m73	N190 E220	3	metavolcanic flakes	
m74	"	1	quartz flake	
m75	N190 E230	5	metavolcanic flakes	
m76	N190 E230	1	quartz flake	
a77	"	1	metavolcanic biface	X
m78	N190 E250	1	metavolcanic flake	
m79	"	2	quartz flakes	
a80	N200 E170	1	metavolcanic biface	X
m81	N200 E180	1	quartz flake	
m82	N200 E200 (Surface)	1	metavolcanic flake	
m83	"	1	quartz flake	
m84	N200 E210	1	metavolcanic flake	
p85	N200 E220	1	small PH sherds (2.56 g)	
p86	"	2	UID PH sherds (30.54 g)	
m87	"	1	metavolcanic flake	
m88	"	4	quartz flakes	
m89	N200 E230	2	quartz flakes	
m90	N200 E250	1	metavolcanic flake	
m91	N210 E190	1	metavolcanic flake	
m92	"	1	quartz flake	
m93	N210 E200	2	metavolcanic flake	
p94	N210 E210	2	small PH sherds (3.67 g)	
m95	"	1	metavolcanic flake	
m96		1	quartz flake	
p97	N210 E220	1	small PH sherd (2.78 g)	
p98	"	1	Hanover cord marked (5.28 g)	X
m99	"	9	metavolcanic flakes	
m100	"	4	quartz flake	
m101	N210 E230	5	metavolcanic flakes	
m102	"	2	quartz flakes	
m103	N220 E180	1	chert flake	
m104	"	1	quartz flake	
m105	N220 E200	1	metavolcanic flake	

m106	N220 E210	7	metavolcanic flakes	
m107	"	5	quartz flakes	
m108	N220 E220	1	metavolcanic flakes	
m109	"	2	quartz flake	
m110	N220 E230	2	metavolcanic flakes	
m111	N220 E240	1	metavolanic flake	
m112	"	1	quartz flake	
m113	N220 E490	3	quartz flakes	
m114	N220 E500	2	metavolcanic flakes	
m115	"	3	quartz flakes	
m116	N230 E190	1	metavolcanic flake	
m117	N230 E200	1	metavolcanic flake	
m118	"	1	quartz flake	
p119	N230 E210	1	small PH sherd (1.83 g)	
m120	"	4	quartz flakes	
m121	N230 E220	2	quartz flakes	
m122	N230 E240	2	metavolcanic flakes	
m123	"	1	quartz flake	
m124	N230 E250	1	quartz flake	
a125	"	1	chert biface tip	X
m126	N230 E260	1	metavolcanic flake	
m127	"	2	quartz flakes	
p128	N230 E460	1	small PH sherds (5.44 g)	
m129	N230 E470	1	metavolcanic flake	
m130	N230 E480	2	quartz flakes	
m131	N240 E400	3	metavolcanic flakes	
m132	N240 E410	1	quartz flake	
a133	N240 E420	1	metavolcanic biface	X
m134	N240 E500	1	metavolcanic flake	
m135	"	1	quartz flake	
m136	N250 E210	5	metavolcanic flakes	
m137	N250 E220	10	metavolanic flakes	
m138	"	6	quartz flakes	
m139	N250 E240 (Surface)	1	quartz flake	
m140	N250 E240	1	metavolcanic flake	
m141	"	4	quartz flakes	
m142	N250 E260	2	metavolcanic flakes	
m143	N250 E470	3	quartz flakes	
m144	N250 E490	2	metavolcanic flakes	
m145	"	1	quartz flake	
m146	N250 E500	2	metavolcanic flakes	
m147	N250 E520	1	metavolcanic flake	
m148	N260 E220	1	small PH sherd (6.85 g)	
m149	"	4	metavolcanic flakes	
m150	N260 E240	2	metavolcanic flakes	
m151	"	2	quartz flakes	
m152	N260 E410	1	metavolcanic flake	
m153	"	2	quartz flakes	
m154	N260 E430	2	metavolcanic flakes	
m155	"	1	quartz flakes	
m156	N260 E460	2	quartz flakes	
m157	N260 E470	2	quartz flakes	
p158	N260 E480	1	small PH sherd (8.16 g)	

m159	"	1	quartz flake	
m160	N260 E510	1	metavolcanic flake	
m161	"	2	quartz flakes	
a162	"	1	metavolcanic biface fragment	X
m163	N270 E220	2	metavolcanic flakes	
m164	N270 E240	4	metavolcanic flakes	
m165	"	14	quartz flakes	
m166	N270 E250	1	metavolcanic flake	
m167	N270 E390	1	metavolcanic flake	
m168	"	1	quartz flake	
m169	N270 E400	1	metavolcanic flake	
m170	"	3	quartz flakes	
m171	N270 E410	1	metavolcanic raw material (9.86 g)	
m172	N270 E430	1	metavolcanic flake	
m173	"	1	quartz flake	
m174	N270 E440	3	metavolcanic flakes	
m175	N270 E450	2	metavolcanic flakes	
m176	N270 E460	4	metavolcanic flakes	
m177	"	1	quartz flake	
m178	N270 E480	5	metavolcanic flakes	
m179	"	8	quartz flakes	
m180	N270 E490	5	metavolcanic flakes	
m181	N270 E500	1	metavolcanic flake	
m182	"	2	quartz flakes	
m183	N270 E510	2	quartz flakes	
m184	N270 E520	1	metavolcanic flake	
m185	N280 E220	1	metavolcanic flake	
m186	N280 E240	4	metavolcanic flakes	
m187	N280 E250	5	metavolcanic flakes	
m188	"	1	quartz flake	
m189	N280 E260	5	metavolcanic flakes	
m190	N280 E400	3	metavolcanic flakes	
m191	"	2	quartz flakes	
m192	N280 E440	3	metavolcanic flakes	
m193	"	5	quartz flakes	
m194	N280 E470	4	metavolcanic flakes	
m195	N280 E500	1	metavolcanic flake	
m196	"	1	quartz flake	
m197	N280 E510	2	metavolcanic flakes	
m198	N290 E200	1	metavolcanic flake	
m199	N290 E200	1	quartz flake	
m200	N290 E210	1	metavolcanic flake	
m201	N290 E240	2	quartz flakes	
m202	N290 E250	4	metavolcanic flakes	
m203	"	1	quartz flake	
m204	N290 E460	1	metavolcanic flake	
m205	N290 E470	1	metavolcanic flake	
m206	N290 E500	1	metavolcanic flake	
m207	N300 E200	2	metavolcanic flakes	
m208	N300 E230	3	metavolcanic flakes	
m209	N300 E240	5	quartz flakes	
m210	N300 E260	1	quartz flake	
m211	N300 E270	2	quartz flakes	

m212	N300 E310	2	metavolcanic flakes	
m213	N300 E390	1	metavolcanic flake	
m214	"	1	quartz flake	
m215	N300 E430	4	metavolcanic flakes	
a216	N300 E440	1	metavolcanic biface	X
m217	N300 E460	1	metavolcanic flake	
m218	N310 E210	2	metavolcanic flakes	
m219	"	1	quartz flake	
m220	N310 E230	6	metavolcanic flakes	
m221	"	1	quartz flake	
a222	"	1	Gypsy stemmed metavolcanic projectile point	X
m223	N310 E240	8	metavolcanic flakes	
m224	"	2	quartz flakes	
m225	N310 E250	3	metavolcanic flakes	
m226	N310 E310	5	metavolcanic flakes	
m227	"	4	quartz flakes	
m228	N310 E320	1	metavolcanic flake	
m229	"	1	quartz flake	
m230	N310 E370	1	quartz flake	
m231	N310 E380	2	metavolcanic flakes	
m232	N310 E390	1	metavolcanic flake	
m233	"	1	quartz flake	
m234	N310 E410	4	metavolcanic flakes	
m235	N310 E420	1	metavolcanic flake	
m236	"	1	quartz flake	
m237	N310 E430	1	quartz flake	
m238	N310 E440	1	metavolcanic flake	
m239	N310 E440	2	quartz flakes	
a240	"	1	quartz hammerstone	X
m241	N320 E230	9	metavolcanic flakes	
m242	N320 E240	3	metavolcanic flakes	
m243	N320 E250	2	metavolcanic flakes	
m244	N320 E260	2	metavolcanic flakes	
m245	N320 E300	1	metavolcanic flake	
m246	N320 E310	6	metavolcanic flakes	
m247	"	1	quartz flake	
m248	N320 E320	2	metavolcanic flakes	
m249	N320 E330	1	metavolcanic flake	
m250	"	1	quartz flake	
m251	N320 E340	4	metavolcanic flakes	
m252	"	1	quartz flake	
m253	N320 E370	4	metavolcanic flakes	
m254		1	quartz flake	
m255	N320 E380	2	metavolcanic flakes	
m256	"	2	quartz flakes	
m257	N320 E390	1	metavolcanic flake	
m258	"	1	quartz flake	
m259	N320 E410	1	quartz flake	
m260	N320 E420	1	metavolcanic flake	
m261	N330 E220	1	quartz flake	
m262	N330 E230	1	metavolcanic flake	
m263	"	1	quartz flake	

m264	N330 E240	1	metavolcanic flake	
m265	N330 E250	1	metavolcanic flake	
m266	N330 E300	5	metavolcanic flakes	
m267	"	1	quartz flake	
m268	N330 E310	1	quartz flake	
a269	N340 E210	1	metavolcanic biface	X
m270	N340 E230	6	metavolcanic flakes	
m271	"	1	quartz flake	
m272	N350 E230	2	metavolcanic flakes	
m273	N350 E250	3	metavolcanic flakes	
m274	N350 E260	1	metavolcanic flake	
p275	N350 E320	2	small PH sherds (5.95 g)	
p276	"	1	Badin UID fragment	X
m277	"	1	metavolcanic flake	
m278	"	1	quartz flake	
m279	N360 E220	1	metavolcanic flake	
m280	N360 E230	4	metavolcanic flakes	
m281	N360 E250	1	metavolcanic flake	
m282	"	1	quartz flake	
m283	N370 E220	1	metavolcanic flake	
m284	N370 E230	19	quartz flakes	
m285	N370 E250	4	metavolcanic flakes	
m286	N390 E230	2	quartz flakes	
m287	TP 8 (0-10 cm)	1	metavolcanic flakes	
p288	TP 8 (10-20 cm)	2	small PH sherds (9.59 g)	
m289	"	16	metavolcanic flakes	
m290	TP 8 (20-30 cm)	34	metavolcanic flakes	
m291	"	2	quartz flakes	
m292	TP 8 (30-40 cm)	46	metavolcanic flakes	
m293	TP 8 (40-50 cm)	12	metavolcanic flakes	
m294	"	1	quartz flake	
a295	"	1	metavolcanic biface	X
m296	TP 8 (50-60 cm)	18	metavolcanic flakes	
m297	"	2	quartz flake	
m298	TP 8 (60-70 cm)	4	metavolcanic flakes	
m299	TP 8 (80-90 cm)	1	metavolcanic flake	
m300	"	1	quartz flake	
m301	TP 8 (90-100 cm)	2	metavolcanic flakes	

Accession Number: 97935

Site Number: 31HT691**

Spec. No.	Location	Number	Description	Class 1
a1	N190 E200	4	glass, clear	X
a2	"	1	nail	X
z3	N200 E160	3	glass, brown	X
a4	N200 E170	2	glass, clear	X

a5	N200 E180	5	glass, clear	X
a6	"	1	glass, light green	X
a7	"	1	glass, window	X
a8	"	3	phonograph record fragment	X
a9	"	1	plastic twist-top cap fragment	X
a10	"	1	plastic hair clip fragment	X
m11	"	2	brick fragments	
a12	N200 E210	3	glass, clear	X
a13	"	1	phonograph record fragment	X
a14	N210 E190	2	glass, clear	X
a15	"	1	glass, brown	X
a16	N210 E200	3	glass,clear	X
p17	TP9 (0-10 cm)	6	whiteware, undecorated	X
p18	"	1	whiteware, yellow tinted	X
p19	"	2	brown saltglazed stoneware	X
a20	"	26	glass, clear	X
a21	"	2	glass, brown	X
a22	"	1	glass, mirror	X
a23	"	1	glass, window	X
a24	"	3	can fragments	X
a25	"	6	nails	X
a26	"	1	button, brass, for overalls	X
a27	"	1	plastic hairbrush fragment	X
m28	"	2	rubber fragments	
m29	"	1	brick fragment	
a30	TP 9 (10-20 cm)	2	glass, clear	X
a31	"	3	nails	X
a32	"	1	zipper pull, brass	X
p33	General Surface	1	whiteware, undecorated	X
p34	"	4	whiteware, blue transfer printed	X
p35	"	1	whiteware, red striped	X
p36	"	2	whiteware, blue tinted	X
p37	"	1	whiteware, pink and green tinted	X
p38	"	2	brown saltglazed stoneware	X
p39	"	1	green saltglazed stoneware	X
a40	"	2	glass, clear (2 partial bottles)	X
a41	"	1	glass, milk	X

Accession Number: 97934

Site Number: 31HT691**

Spec. No.	Location	Number	Description	Class 1
a42	General Surface	1	glass, brown	X
a43	"	1	brass salt shaker lid	X
a44	"	2	phonograph record fragments	X
a45	"	1	porcelain door knob fragment	X
a46	"	1	brass clothing hook X	
a47	"	1	iron fire grate fragment	X

Accession Number: 97936

Site Number: 31HT692

Spec. No.	Location	Number	Description	Class 1
m1	N200 E200	7	metavolcanic flake	
m2	N200 E210	1	quartz flake	
p3	TP 19 (0-10 cm)	2	small PH sherds (6.88 g)	
m4	"	2	metavolcanic flakes	
m5	TP 10 (20-30 cm)	2	quartz flakes	
m6	TP 10 (30-40 cm)	3	metavolcanic flakes	

Accession Number: 97937

Site Number: 31HT693

Spec. No.	Location	Number	Description	Class 1
m1	N200 E200	2	metavolcanic flakes	

Accession Number: 97938

Site Number: 31HT694

Spec. No.	Location	Number	Description	Class 1
m1	N190 E200	2	quartz flakes	
m2	N200 E200	1	metavolcanic flake	
m3	"	1	quartz flake	

Accession Number: 97939

Site Number: 31HT695

Spec. No.	Location	Number	Description	Class 1
m1	N180 E210	4	metavolcanic flakes	
m2	N200 E200	3	quartz flakes	
a3	"	1	metavolcanic biface tip	X
m4	N200 E210	1	quartz flake	
m5	N210 E200	2	metavolcanic flakes	
m6	N210 E210	2	metavolcanic flakes	

Accession Number: 97940

Site Number: 31HT696

Spec. No.	Location	Number	Description	Class 1
a1	N190 E180	1	Hardaway side-notched quartz projectile point	X
m2	N190 E200	3	metavolcanic flakes	
m3	N200 E200	1	metavolcanic flake	
m4	N200 E210	11	metavolcanic flakes	
m5	N200 E230	1	metavolcanic flake	

Accession Number: 97941

Site Number: 31HT697

Spec. No.	Location	Number	Description	Class 1
a1	N190 E190	1	glass, brown	X
a2	"	1	nail fragment	X
a3	N200 E170	1	glas, aqua	X
a4	N200 E190	2	nail fragment	X
a5	"	1	UID iron fragment	X
a6	N200 E200	1	glass, window	X
a7	"	1	screw fragment	X
a8	"	6	nail fragment	X
a9	TP 15 (0-10 cm)	1	glass, aqua	X
a10	"	4	nail fragments	X
p11	TP 15 (10-20 cm)	1	grey saltglazed stoneware	X
a12	"	1	glass, window	X
a13	"	3	nail fragments	X
p14	General Surface	1	whiteware, undecorated	X
a15	"	1	glass, clear	X

Accession Number: 97942

Site Number: 31HT698**

Spec. No.	Location	Number	Description	Class 1
p1	N200 E200	1	whiteware, undecorated	X

Accession Number: 97943

Site Number: 31HT699

Spec. No.	Location	Number	Description	Class 1
m1	N180 E180	1	metavolcanic flakes	
m2	N200 E160	5	metavolcanic flakes	
m3	N200 E170	7	quartz flakes	
m4	N200 E180	6	metavolcanic flakes	
m5	"	1	quartz flake	
m6	N200 E190	1	metavolcanic flake	
m7	"	1	quartz flake	
m8	N200 E200	1	quartz flake	
m9	N200 E210	4	metavolcanic flakes	
m10	TP 17 (0-10 cm)	1	quartz flake	
m11	TP 17 (10-20 cm)	2	metavolcanic flakes	
m12	"	3	quartz flakes	
m13	TP 17 (20-30 cm)	4	metavolcanic flakes	
m14	"	4	quartz flakes	
m15	TP 17 (30-40 cm)	5	metavolcanic flakes	
m16	"	5	quartz flakes	
m17	TP 17 (40-50 cm)	2	quartz flakes	

Accession Number: 97944

Site Number: 31HT700

Spec. No.	Location	Number	Description	Class 1
m1	N200 E200	1	metavolcanic flake	
m2	"	1	quartz flake	
m3	N210 E200	3	metavolcanic flakes	

Accession Number: 97945

Site Number: 31 HT701

Spec. No.	Location	Number	Description	Class 1
m1	N200 E200	1	metavolcanic flake	

Accession Number: 97946

Site Number: 31HT702

Spec. No.	Location	Number	Description	Class 1
m1	N200 E200	5	quartz flakes	

Accession Number: 97947

Site Number: 31HT703

Spec. No.	Location	Number	Description	Class 1
m1	N190 E190	4	metavolcanic flakes	
m2	N200 E190	4	metavolcanic flakes	
m3	N200 E200	1	quartz flake	
m4	TP 21 (10-20 cm)	2	quartz flake	
m5	TP 21 (20-30 cm)	4	metavolcanic flakes	
m6	TP 21 (30-40 cm)	1	quartz flake	
m7	TP 21 (40-50 cm)	1	metavolcanic flake	
m8	TP 21 (50-60 cm)	1	metavolcanic flake	
m9	"	3	quartz flakes	

Accession Number: 97948

Site Number: 31HT704

Spec. No.	Location	Number	Description	Class 1
m1	N200 E200	1	metavolcanic flake	

Accession Number: 97949

Site Number: 31HT705

Spec. No.	Location	Number	Description	Class 1
m1	N200 E200	3	quartz flakes	

Accession Number: 97950

Site Number: 31HT706

Spec. No.	Location	Number	Description	Class 1
m1	N200 E200	2	metavolcanic flakes	

Accession Number: 97951

Site Number: 31HT707

Spec. No.	Location	Number	Description	Class 1
m1	N190 E220	2	metavolcanic flakes	
m2	N190 E230	1	metavolcanic flake	
m3	"	2	quartz flakes	
m4	N200 E170	2	metavolcanic flakes	
m5	N200 E200	2	metavolcanic flakes	
m6	N200 E220	2	quartz flakes	
m7	N210 E170	5	metavolcanic flakes	
m8	N210 E190	3	metavolcanic flakes	
m9	N210 E200	1	metavolcanic flake	
m10	N210 E210	1	metavolcanic flake	
m11	N220 E200	1	metavolcanic flake	
m12	N220 E220	3	metavolcanic flakes	
m13	"	1	quartz flakes	
p14	N230 E200	1	small PH sherds (4.50 g)	
m15	"	1	metavolcanic flake	
m16	TP 25 (0-10 cm)	1	quartz flake	
m17	TP 25 (20-30 cm)	1	metavolcanic flake	
m18	TP 25 (40-50 cm)	1	metavolcanic flake	

Accession Number: 97952

Site Number: 31HT708

Spec. No.	Location	Number	Description	Class 1
m1	N160 E210	9	metavolcanic flakes	
m2	N170 E210	1	metavolcanic flake	
m3	"	2	quartz flakes	
m4	N180 E210	1	metavolcanic flake	

m5	"	3	quartz flakes	
a6	"	1	Kirk stemmed metavolcanic projectile point	X
m7	N190 E200	1	metavolcanic flake	
m8	N190 E210	2	metavolcanic flakes	
m9	"	1	quartz flake	
m10	N200 E200	3	quartz flakes	
p11	TP 26 (0-10 cm)	2	small Ph sherds (4.65 g)	
p12	TP 26 (10-20 cm)	1	small Ph sherd (7.48 g)	
m13	"	4	metavolcanic flakes	
m14	TP 26 (20-30 cm)	3	metavolcanic flakes	
p15	General Surface	11	small PH sherds (28.25 g)	
m16	"	8	metavolcanic flakes	
m17	"	4	quartz flakes	

Accession Number: 97953

Site Number: 31HT709

Spec. No.	Location	Number	Description	Class 1
m1	N200 E200	1	metavolcanic flake	
a2	"	1	quartz biface	X
a3	"	1	Clarksville small triangular quartz projectile point	X

Accession Number: 97954

Site Number: 31HT710**

Spec. No.	Location	Number	Description	Class 1
a1	N190 E220	1	glass, clear	X
a2	N190 E230	1	nail	X
a3	N190 E240	2	glass, clear	X
a4	N200 E210	1	glass, clear	X
a5	"	1	nail	X
a6	N200 E220	1	glass, clear	X
a7	"	1	UID iron and lead object	X
a8	N210 E220	5	glass, clear	X
a9	"	4	glass, brown	X
a10	"	11	can fragments	X
a11	"	8	nails	X
m12	"	5	brick fragments	
a13	TP 28 (0-10 cm)	2	glass, clear	X
a14	Surface, 15 m W of ST 13	1	Morrow Mountain II metavolcanic projectile point fragment	X

Accession Number: 97955

Site Number: 31HT711

Spec. No.	Location	Number	Description	Class 1
m1	N200 E200	4	metavolcanic flakes	

Accession Number: 97956

Site Number: 31HT712

Spec. No.	Location	Number	Description	Class 1
m1	N190 E200	2	metavolcanic flakes	
m2	N200 E200	2	metavolcanic flakes	

Accession Number: 97957

Site Number: 31HT713

Spec. No.	Location	Number	Description	Class 1
m1	N200 E200	2	quartz flakes	

Accession Number: 97958

Site Number: 31HT714

Spec. No.	Location	Number	Description	Class 1
m1	N220 E200	2	metavolcanic flakes	
p2	N200 E20 (Surface)	3	small Ph sherds (17.95 g)	
p3	"	1	Badin (?) fabric impressed sherds (20.65 g)	X
m4	"	1	quartz flake	

Accession Number: 97959

Site Number: 31HT715

Spec. No.	Location	Number	Description	Class 1
p1	N200 E200	2	small Ph sherds (7.87 g)	

Accession Number: 97960

Site Number: 31HT716

Spec. No.	Location	Number	Description	Class 1
m1	N200 E200	1	quartz flake	

Accession Number: 97969

Site Number: 31HT123**

Spec. No.	Location	Number	Description	Class 1
p1	General Surface	1	whiteware, undecorated	X

Accession Number: 97927

Site Number: 31T684

Spec. No.	Location	Number	Description	Class 1
m1	T 8 1/2 ST 9	2	chert flakes	